

*An Introduction to National Income  
and Income Analysis*

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FIRST EDITION

SECOND IMPRESSION

NEW YORK TORONTO LONDON

McGRAW-HILL BOOK COMPANY, INC.

1949

AN INTRODUCTION TO NATIONAL INCOME AND INCOME ANALYSIS

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# Preface

This book was written primarily to avoid the task of giving detailed empirical and theoretical material in lecture form. In recent years there has been increasing recognition that economics should concern itself with observed facts, and the developments in national income have been outstanding in this respect. By introducing the complete framework of national income accounting into economics, much of the vagueness of typical general economic theory can be overcome. This book attempts to build up the national income concepts from the basic accounts of individual firms, government units, and households; to a very large extent the purpose of this approach is to bridge the gap that exists between micro- and macro-theory, *i.e.*, between value theory and general equilibrium theory. After the structural framework has been erected as a tool of analysis in Part One, it is applied in Part Two to income analysis. In so doing it is hoped that income analysis can be made more explicit and more realistic. This presentation contains little that is original; it merely brings together generally accepted material.

The material has been organized around the concepts of the national income accounts and the theory of income analysis. Part One is devoted to the explanation of national income concepts and the creation of a general theoretical framework. The body of the chapters in Part One develops the central argument on an elementary level; they form a complete explanation of the theory of national income. The appendixes to these chapters are of two types. Certain of them are simple but detailed elaborations of what was taken up in the chapters. Other appendixes will be useful only to those who are interested in a more detailed study of the subject of national income. These appendixes deal with the simplifications that were necessarily made in the chapters. The material in Chap. 6 may be of little interest for many readers; it develops input-output tables and

is not necessary for an understanding of national income. Part Two is an application of the tools developed in Chaps. 1 through 5 to the specific problem of income analysis. By using the national income accounts, it is hoped that greater rigor can be introduced into this field of theory and that the apparent paradox of saving and investment can be explained in an understandable way.

Most of the material in this book is available in the literature in scattered form. In addition I am indebted to specific individuals at Harvard, Yale, and the Department of Commerce. The early stages of this material were developed at Harvard, where the relationship between the individual firm and the national income concepts was written up for use in the elementary economics course. For assistance with this part, I am indebted to Professor William Leonard Crum. The actual scope of the work was largely decided in my discussions with Professor Alvin Hansen, whom I wish to thank for the very great interest he has taken in this book. Professor Edward S. Mason helped solve many of the problems of simplification and completeness by suggesting the technique of relegating both the highly detailed and the more advanced material to appendixes following the chapters. Both Edward Denison and George Jaszi of the National Income Division of the U.S. Department of Commerce have made substantial contributions to the ideas in Part One. The material in the appendix to Chap. 5 was drawn entirely from information made available by the National Income Division. Finally, I owe much to the criticisms of Professors John P. Miller and Max F. Millikan of Yale; my ideas about what constitutes income analysis were greatly influenced by talks with them. Many suggestions of necessary changes were made as a result of the use of different portions of an early draft in the elementary, intermediate, and graduate economics courses at Yale. Professor Miller convinced me of the usefulness of a transactions approach, and Professor Millikan contributed a great deal to the central theoretical structure.

RICHARD RUGGLES

NEW HAVEN, CONN.

*August, 1948*

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*Part One*

*National Income*



# 1. National Income Accounts, Exchange, and Production

## **The Growth of National Income Concepts**

The development of the national income concepts in recent years has proved to be very useful in understanding and explaining what takes place in the economy. This development is not simply one of greater refinement in the collection of statistics about the economy but rather represents a marked change in the manner in which the measurements and their relation to each other have been envisaged. The pioneer work in this field has been concerned both with the theoretical implications of the subject and with the force of empirical reality.

On the one hand, the theoretical formulations have attempted to provide general methods of procedure and meaningful definitions of aggregates. Masses of unrelated statistics add little to the understanding of the economic system, and only by careful reasoning can the highly detailed data be combined in such a manner that the final set of statistics will present a related picture. Theorists must decide between relevant and irrelevant statistics; upon such decisions rests the usefulness of the structures that they erect. A systematic treatment of data is helpful only when the basis of the system is relevant and meaningful.

Actual data, on the other hand, have often brought to light internal inconsistencies in the theoretical objectives of the system or have confronted the theorist with unexpected problems when he has attempted to bring reality into his theoretical framework. Concepts in the minds of theorists seldom are refined to the point where they will fit all concrete situations. In the process of trying to fit actual data into

the theoretical framework, the framework itself is forced to undergo change; with this change it acquires new implications and meaning.

The development of the national income concepts and statistics has thus been an evolutionary process, wherein theory and reality have continually interacted to bring about changes in substantive content. The focus of interest in national income has shifted from concern with a single aggregate to the construction of a framework for the economy. Prior to 1929 little work had been done on national income by the government; most of the research had been carried out by academic economists and economic foundations. With the depression of the thirties, governmental concern about the state of the economy increased, and the study of national income was undertaken by the Department of Commerce. During World War II this work was found to be very important in designing measures for controlling the operation of the war economy. Under the pressure of these needs important changes were made in the content and the methods of computing various parts of the national income statistics.

These national income statistics are now used for many widely different purposes. The President, in making his annual economic report to the Congress, relies heavily upon these statistics to present the facts about the state of our economy. Various government departments need such statistics to guide their current operations. The Treasury Department, for instance, uses them to estimate future tax receipts. The Department of Labor is interested in them from the point of view of wage payments and employment levels. The Department of Agriculture needs them to help in studying the demand for agricultural products and the effects of farm-aid programs. Besides government agencies, many businessmen are interested in studying the economic condition of the country so that their decisions will have more relevance—since understanding what is taking place in the present is essential for any sound judgment of what the future may bring. Finally, economists are very much interested in national income statistics, because they contain a great deal of information about the operation of the economy. When this information is used in conjunction with theoretical analysis, it can substantially further our understanding of economic processes.



### **National Income as the Accounts of the Economy**

National income concepts and measurements in one sense are derived from the current accounts for the economy. The accounts for the economy provide a framework within which the current operations of the economy can be recorded, in much the same way that certain financial statements provide such a framework for recording the current operations of an individual enterprise. Essentially, the national income accounts can be looked upon as a system of classification that is necessary to provide a descriptive and factual account of what has happened in the economy. They are built up from and summarize the operations of individual enterprises. An understanding of the nature of the accounts of such individual enterprises is therefore essential to a comprehension of the basis of national income accounts and measurement.

Part One will consider national income concepts in the accounting framework. For this purpose the accounts of productive units will be examined, and from the current accounts of such units the national income accounts will be derived. The text of the chapters will carry through the development of the concepts in their broad outline, and the appendixes following each chapter will provide material that is either subsidiary or supplementary to the text. Readers wishing to understand only the general meaning and content of national income concepts will find it unnecessary to consult the appendixes. Those interested in obtaining a more detailed knowledge of national income accounts and measurements may find several of the appendixes helpful in going beyond the general principles stated in the text.

### **National Income Accounts as a Tool of Economic Analysis**

In addition to providing a framework for statistical data, national income accounts are very useful in explaining how the economy operates. The erection of a classificatory framework that is descriptive of reality also provides a system that embraces important economic magnitudes and interrelationships. Many of the recent developments in economic theory have served to focus attention upon these magnitudes and relationships, so that in this sense national income accounts and measurements are a part of the theoretical structure of economics and provide well-defined schemata of the working of the system. An

understanding of this function of national income is essential to a comprehension both of the working of the system and of the underlying significance of national income itself.

Part Two of this book shows this interrelation between the national income concepts and the theoretical structure of income analysis. The concepts and measurements that have been explained in Part One are related to the functioning of the economy, and the theory of income analysis is discussed in these national income accounting terms. Part Two has a dual purpose: The national income accounts and statistics are given more meaning by relating them to the functioning of the economy, and at the same time the theory of the operation of the economy is given reality by using the actual national income accounts.

### PRODUCTION IN A MODERN EXCHANGE ECONOMY

#### **The Nature of a Modern Exchange Economy**

The exchange of goods and services through market transactions is an essential feature of a modern exchange economy. Such transactions are necessary for the functioning of the system, for only by this process can production occur and goods become available for consumption. The specialization of productive activity existing in an economy such as that of the United States demands that each individual devote the major part of his energies to one specific job. In return for this expenditure of effort the individual is customarily paid in money, which can be exchanged for whatever commodities and services he wants. The wage earner works for an employer who pays him wages for his labor; the farmer grows agricultural products for sale on the market in order to get income to buy other goods. Such examples as these need no further elaboration, since they are self-evident to everyone who lives in an exchange economy. But the mechanisms that permit such a system to operate successfully are very complex and are not self-evident.

In the early history of our economy exchange did not play the same role that it plays today. At that time individuals often provided directly for their own consumption instead of obtaining all they consumed from the market. A change in the production and consumption of an individual would not then necessarily have had repercussions on other individuals. If a man worked harder and built himself a better home

or produced more products for himself, he might well have achieved a higher standard of living without affecting anyone else in the economy. In contrast, today almost every individual is linked to other individuals through the work he does and through the products he consumes. If an individual produces more, the amount of output that appears on the market will be changed. This will have repercussions upon other individuals in two ways. Those who are also producing this commodity for sale are in competition with the first individual; the price they can obtain for their output may be reduced by his increased output. Those buying the product, on the other hand, will find that more is available; this greater supply may make the product cheaper for the purchaser. Likewise, if an individual changes his consumption, the amount he removes from the market will be changed. This again will have repercussions both on those who produce and on those who consume.

This interrelation of individuals through transactions is partly obscured by the fact that action of one individual rarely appears to have a significant effect on either price or output in the economy. But when a sizable group of individuals react together, the effect upon others in the economy is often dramatically revealed. For instance, a new taxicab company in a small town will radically alter the earnings of those already employed in the taxi business, and it may also cause a change in taxi rates or improve the service given to consumers. A change in consumer tastes or fashions may also have repercussions on those who produce; changes in the popularity of lace, for instance, have caused violent fluctuations in the fortunes of those employed in lacemaking. The relationships of individuals to one another are thus both complementary and competitive. They are complementary because each individual is dependent upon the others for the commodities and services necessary for his existence, and the others, in turn, must utilize his production. On the other hand, individuals compete with one another both in offering services on the market and in purchasing goods and services from the market.

The modern exchange economy is thus essentially a mechanism that links production and consumption. The purpose of national income measurements is to provide a guide through the maze of complex interrelationships that develop in such a system. To the casual observer it may well seem that the economy in which we live is too complex

for any useful generalizations to be made about it—there are billions of individual transactions each year, and almost all of them are in some way interdependent. One of the first tasks of the economist is to bring order into this apparent chaos, so that the various patterns which exist and the processes which take place can be analyzed. Before intelligent attempts can be made to improve the effectiveness of the economic system in meeting human needs, a thorough understanding of how the system operates is necessary.

### **Transactions and Economic Activity**

In an exchange economy most economic activity is reflected by transactions. These transactions may be of very different types. The payment of taxes by a business, for example, is very different from the payment of wages or salaries to individuals. The expenditures of consumers and the outlays of producers for capital equipment represent still different types of transactions, all of which must be distinguished from each other if a useful analysis of what is taking place in the economy is to be made. National income makes use of these transactions to portray what has taken place in the economy over a past period of time. For this purpose it is necessary to establish a system of classification that is capable of revealing the patterns of economic activity.

Some economic activity does take place without transactions; and if only the actual transactions that have taken place were considered, national income statistics might well be an incomplete account of economic activity. For this reason it is sometimes necessary to impute certain transactions to various parts of the economy when actually no such transactions have taken place. No formal transaction records the consumption by the farmer of food that he himself has produced. In cases such as this an imputed transaction is set up showing, on the one hand, the market value of the goods the farmer produces for home consumption and, on the other hand, the market value of the home-produced goods the farmer consumes. By this process national income can cover kinds of economic activity that never reach the market place.<sup>1</sup>

<sup>1</sup> Certain economic activities, *e.g.*, the services of the housewife, are not imputed even though they do not appear on the market, since the problem of measurement is too difficult to carry out in a statistically reliable manner.

Not all transactions that take place in an economy will be utilized in the construction of national income measurements. The sale of a used car by one individual to another represents a change in the ownership of an asset in the economy but does not affect the total of such assets in existence. Such transactions, which result in a change in ownership of existing assets but do not reflect any economic activity on the part of the participants aside from purely financial transactions, are excluded from national income measurements. It is not simple to define at this stage the difference between the types of transactions that should be included in national income and those which should be excluded; for the most part the techniques and classifications used by accountants for the classification of transactions in the construction of their financial statements will be adopted in the following chapters.

### **The Definition of Production in an Exchange Economy**

Before going into the detailed techniques of classifying and combining transactions, it is necessary to obtain some idea about what is meant by production in the economy. To most people production calls to mind the activities of a manufacturing plant or perhaps a farm enterprise, but for economic purposes such a concept of production is too narrow. In broader terms any process that creates value or adds value to already existing goods is production. By shipping oranges from California to New York a dealer finds that he can obtain a higher price. This process of distribution is therefore production, since it has added value to the oranges. The narrower concept of production obviously fits within this definition too: Manufacturing adds value to existing raw materials. By the use of labor and machinery, the raw materials are converted to a more highly fabricated form that has greater value.

The use of value as a criterion in defining production has other advantages. It permits the comparison of relative amounts produced by different types of activities. In comparing the production of an equal weight of nails and screws, it is possible to say that the screws represent more production, since they have greater value. Similarly, the relative amounts of production carried out by such widely different enterprises as a textile spinning mill and a chemical plant producing sulphuric acid can be evaluated. Value is used as a common denomi-

nator; and by analyzing the value of the transactions that take place, measurements of production can be built up that will have meaning with reference to the various national income concepts.

### **The Factors of Production**

The elements responsible for the creation of value or for the addition of value to existing products are called the "factors" of production. A farmer in producing his crops uses the natural resources of the soil, his labor, the services of agricultural equipment, and his own initiative to help create the goods. Economists frequently speak of these factors of production in more general terms as, respectively, land, labor, capital, and entrepreneurship. The last named of these, "entrepreneurship," designates the element that binds all the other factors of production into a useful coherent purpose. The others are relatively self-explanatory. Any kind of productive activity can be analyzed in these terms. A manufacturing firm, for instance, uses the labor of wage earners, the services of capital equipment, and the services of the entrepreneur to aid in processing raw material; the value added by its activities is the result of these elements.

Payments to the factors of production may take many forms. Land and other scarce natural resources are often paid rent for their share in the productive process. Payments to labor may range from wages and salaries to fees and royalties. Capital may receive either interest or dividends. Finally, entrepreneurship often receives that portion of the total receipts which is left over after other costs are paid—this is called "profit." In actual practice, the division between the factors of production is not always clear-cut, and the payments that are made, correspondingly, may cover several different types of contribution. The farmer, perhaps, represents the extreme—the amount of cash receipts that he has left over after cash outlays have been made may represent one lump payment to all the factors that have been used. In most businesses the accounting profit may well represent in part payment for the labor of the entrepreneur, quasi rent, and even interest on the capital used in the business. The concept of the different factors of production is useful, but it should be kept in mind that in most instances it is not possible to show separately exactly what these factors are.

### The Definition of a Productive Unit

The definitions of production and of the factors of production have laid the basis for defining a productive unit. Any individual, firm, or government agency that creates value by combining factors of production is considered to be a productive unit.

An individual who conducts his own activity to the degree that he produces a marketable commodity can be considered a productive unit by himself. There are many such individuals in our present-day economy. Doctors and lawyers who have private practices are individual productive units. Farmers, artists, or peddlers who are not paid for their labor by any one specific organization are also productive units. On the other hand, an individual who is an employee of a firm and as such receives a wage or salary cannot be considered an independent productive unit. He is part of a larger productive unit, which uses his services and those of other individuals in combination with other factors of production to create value. By definition, all productive activity in the economy is carried out by productive units, and every individual who is productive is either a productive unit in his own right or else a part of a larger productive unit.

The most familiar type of productive unit is the business enterprise. Business enterprises take the legal form of individual proprietorships, partnerships, cooperatives, or corporations. The majority of business firms in the United States are quite small (employing less than fifty people); but although such firms are very numerous, they carry out only a minor fraction of total production. Relatively few very large corporations are responsible for the major portion of manufacturing output in the United States.

A government agency may also be a productive unit. The Post Office Department, for instance, hires people and creates value by delivering the mails, and local water departments combine factors of production to provide water for a town. The police department provides protection. Even Congress provides highly important services in a nation so large that direct legislation by the citizens is not feasible.

Finally, a household may be a productive unit. A household can hire people to work for it in much the same way that a business firm does. Ordinarily, however, the household differs from the business firm in that the services it produces are consumed within it without ever appearing on the market.

Thus the economy is made up of productive units that combine the factors of production to create value. By analyzing the transactions of these productive units, national income measurements can be erected that will reveal the pattern of economic activity. The first step toward developing the necessary classifications of these transactions will involve a study of the books and accounts of productive units. From this it will be possible to develop further classifications and combinations of specific types of transactions into the national income measurements themselves.



## 2. The Function of Accounts in the Productive Unit

All but the smallest of productive units find it necessary to keep some record of the transactions into which the firm enters. A record of sales that are made to other firms on credit must be kept so that the amount owed to the firm will be known accurately. Similarly, purchases from other firms on credit must be recorded to keep track of how much the firm owes others. Cash transactions also are important, even though they do not change the debt position of the firm; an accurate accounting of costs and knowledge of the amount of cash and goods on hand will have important bearing on the policy of the firm. Every transaction will alter the position of the firm, and the accounts that the firm keeps to give it knowledge of its position must be altered when transactions take place so that a true picture will be given.

Many corporate productive units are extremely complicated. They may own buildings, machinery, and raw materials with which to carry out production. At the same time they may owe bills for goods they have bought, wages for work their employees have done, and money that has been borrowed from banks or other creditors. Funds will have been contributed to the enterprise by the stockholders when they purchase stock, usually in the expectation that they will get a return in the form of dividends or increased value of their stock. A portion of the profits that the productive unit has made may not have been paid out to the stockholders but instead may have remained in the business as an increase in its assets or may have been used to pay off prior indebtedness. To keep track of all these complicated interrelationships within the firm, two very natural sets of accounts have been developed. This chapter will explain the general purpose and nature

of these sets of accounts and will show how they are related to the transactions made by the firm.

## THE BALANCE SHEET AND THE INCOME STATEMENT

### The Function of the Balance Sheet and the Income Statement

The first set of accounts is designed to show the economic position of a productive unit at any one time; it shows, for instance, the amount the firm owes to others as of a given date. This set of accounts is generally referred to as the balance sheet of the enterprise. The second set of accounts shows what has happened to the productive unit over a period of time; for instance, it shows what the total volume of sales over the past year has been. This set of accounts is referred to as the income statement or profit and loss account.

**THE BALANCE SHEET.** There are basically three types of questions relating to the economic position of a productive unit at any one time: (1) What is the value of the assets owned by the productive unit? (2) What is the total of the bills and debts (liabilities) that are owed? (3) What is the residual share that the owners may claim after the total liabilities have been subtracted from the total value of the assets? The owners' share by definition is equal to the total value of the assets minus the total liabilities. For this reason the total value of the assets must exactly equal (or balance) the total amount of the liabilities plus the share that may be claimed by the owners. The balance sheet gives the answers to these three questions. It lists the total assets owned by the firm and shows the types of claims that are held against these assets.

The balance sheet gives a picture of the position of the firm at a given single instant. The assets and liabilities of a productive unit will always be changing, so that the picture presented in the balance sheet will ordinarily be true only for one specific time. Most companies draw up a balance sheet at least once a year; very often, it shows the assets and the claims on these assets on December 31 of a specified year. By examining the balance sheets for a series of years, it is possible to see how the assets of a company have grown or declined and how the claims on these assets have changed.

**THE INCOME STATEMENT.** Individuals or companies usually attempt to operate a productive unit in the hope of gain or profit. Profit is residually determined: The profit realized on the sale of products can

be computed by subtracting the total cost of producing these products from their sales value. A firm must keep account of its income and its costs, therefore, to be able to tell whether or not its operations are profitable. The income statement, or profit and loss account as it is sometimes called, is in general use by almost all except the smallest firms. Without such information, businessmen would not have an adequate guide for their policies or any reasonable basis for their decisions. Productive units that are at all complex must, of necessity, use such measurements if there is to be any intelligent management.

The income statement shows what has taken place over a given period of time, usually a year. It reports the sales of product that have been made during this period, together with figures showing the cost of the goods that were sold. The income statement contributes a great deal of information about what has happened to the firm during a particular year, whereas the balance sheet gives the economic position of the firm at the end of the year.

### The Balance Sheet: A Simplified Example

In Table 1, a simplified sample balance sheet for a manufacturing corporation is given. The value of each major category of assets owned

*Table 1. Simplified Sample Balance Sheet of a Manufacturing Corporation as of December 31, 19—*

Assets		Liabilities and Proprietorship	
Cash.....	\$ 122,048	Accounts payable.....	\$ 100,738
Accounts receivable . . .	136,496	Bonds . . . . .	191,197
Marketable securities . . . .	124,515	Capital stock.....	902,470
Inventories.. . . .	306,745	Surplus . . . . .	322,272
Plant and equipment:			
Cost.....	\$2,568,247		
Less allowance for deprecia- tion.....	1,741,374		
	826,873		
Total assets.....	\$1,516,677	Total liabilities and pro- prietorship.....	\$1,516,677

by the corporation is shown on the left part of this sheet. The total shown there for these assets is just over one and a half million dollars.

The right-hand side of the balance sheet shows the liabilities and proprietorship of the corporation. The liabilities (accounts payable and bonds) total almost \$300,000. Since the total assets of the corporation were about \$1.5 million, the share remaining to the stockholders in the proprietorship accounts (capital stock and surplus) is about \$1.2 million. For an explanation of the exact meaning of the various accounts and for an example of a more detailed and realistic balance sheet, see the appendix to this chapter.

### The Income Statement: A Simplified Example

Table 2 gives an example of a simplified income statement for a manufacturing corporation. The right-hand side of the income statement shows the sources from which the receipts of the corporation

*Table 2. Simplified Sample Income Statement for a Manufacturing Corporation for the period January 1, 19—, to December 31, 19—*

(In thousands)

Goods and materials purchased from other firms.....	\$ 600	Sales to Company A.....	\$ 700
Depreciation of plant and equipment.....	70	Sales to Company B.....	250
Taxes other than corporate profits taxes.....	40	Sales to Company C.....	375
Social insurance contributions.....	25	Sales to Company D.....	80
Wages and salaries.....	652	Other sales.....	110
Interest.....	15		
Provision for corporate profits taxes.....	37		
Dividends paid.....	50		
Undistributed profits.....	26		
<hr/>		<hr/>	
Total allocations of current receipts.....	\$1,515	Total current receipts.....	\$1,515

were derived during the current period, in this case sales to various different purchasers, totaling over a million and a half dollars. The left-hand side of the income statement shows how these receipts were allocated among the various costs incurred in producing the goods that were sold, how much was left over as profit, and how these profits were allocated among taxes, dividends paid to stockholders, and undistributed profits retained in the corporation. The various items of costs total just under \$1.4 million; this leaves slightly over \$100,000 as

profits. An explanation of the various items of receipts and of costs and profits, together with a more detailed income statement, is given in the appendix to this chapter.

### TRANSACTIONS: THEIR RELATION TO ACCOUNTS

#### Accounts as Records of Transactions

Transactions, to repeat, are the elements out of which the sets of accounts described in the previous section are built. The balance sheet is a picture of the position of the firm at any given moment; every transaction that takes place will alter that picture, and it cannot change except as the result of a transaction. Similarly, the income statement is a record of the sales and costs of the firm—its income-producing activities—over some period. These income-producing activities are nothing but a series of transactions. The summary accounts—the income statement and the balance sheet—are thus merely records of the effects of transactions upon the firm.

**THE BALANCE SHEET.** Any transaction into which the firm enters will affect the balance sheet of the firm. This is true because the balance sheet will reflect any change in assets, in liabilities, in proprietorship, or in the composition of any of these, and all transactions will have an effect upon one or more of these items. This can be demonstrated by means of an example, in which the effects of various types of transactions upon the balance sheet can be traced. Consider the extremely simplified balance sheet given below.

Assets		Liabilities and Proprietorship	
Cash	\$ 1,000	Accounts payable	\$ 2,000
Inventories	2,500	Capital stock and surplus	11,500
Plant and equipment	10,000		
	<hr/>		<hr/>
Total assets	\$13,500	Total liabilities and proprietorship	\$13,500

One of the commonest types of transaction that the firm can be expected to enter into is the sale of its product. Such a transaction—say, the sale of \$500 worth of product for cash—would alter the balance sheet in two ways. (1) If the goods are sold for exactly what it cost to

produce them, inventories will be reduced by \$500, since the delivery of the product would mean that \$500 worth less of finished products would be held in the stockrooms of the firm. (2) Cash would be increased by \$500, to signify that payment of this amount had been made for the goods. The total amount of assets would remain unchanged, but its composition would be different. The altered account would appear as follows:

Assets		Liabilities and Proprietorship	
Cash	\$ 1,500	Accounts payable	\$ 2,000
Inventories	2,000	Capital stock and surplus	11,500
Plant and equipment	10,000		
	<hr/>		<hr/>
Total assets	\$13,500	Total liabilities and proprietorship	\$13,500

Alternatively, instead of paying cash, the purchaser might have bought the goods on credit. This would make necessary the addition of an accounts receivable item to the assets side of the balance sheet; accounts receivable would have increased by \$500, and inventories would have decreased by \$500.

Many kinds of transactions will alter the liabilities of the firm. For example, the purchase of raw materials that are not paid for immediately in cash will increase the accounts payable of the firm. If a firm buys \$300 worth of raw materials for which it does not make immediate payment, accounts payable will increase by \$300 and inventories will also increase by \$300, since the quantity of raw materials on hand will have increased by that much. Total assets will increase by \$300, and total liabilities will also increase by \$300. The effect of this transaction upon the last balance sheet shown would be as follows:

Assets		Liabilities and Proprietorship	
Cash	\$ 1,500	Accounts payable	\$ 2,300
Inventories	2,300	Capital stock and surplus	11,500
Plant and equipment	10,000		
	<hr/>		<hr/>
Total assets	\$13,800	Total liabilities and proprietorship	\$13,800

The proprietorship of the firm will change whenever a transaction is made involving the capital stock or the surplus of the firm. Suppose the firm buys a plant for \$1,000 and pays for the plant by giving the owner some shares of capital stock. Plant and equipment will increase by \$1,000, since the firm now owns this much more plant, and capital stock will increase by \$1,000, since this amount of additional stock has been issued to pay for the plant. The following balance sheet shows how this transaction would affect the last account shown.

<b>Assets</b>		<b>Liabilities and Proprietorship</b>	
<b>Cash</b>	<b>\$ 1,500</b>	<b>Accounts payable</b>	<b>\$ 2,300</b>
<b>Inventories</b>	<b>2,300</b>	<b>Capital stock and surplus</b>	<b>12,500</b>
<b>Plant and equipment</b>	<b>11,000</b>		
	<hr/>		<hr/>
<b>Total assets</b>	<b>\$14,800</b>	<b>Total liabilities and proprietorship</b>	<b>\$14,800</b>

The surplus account will change whenever a fixed asset is sold for an amount different from that at which it is listed on the balance sheet. If, for example, some machinery listed on the balance sheet as worth \$200 is actually sold for \$300, the plant and equipment account will be decreased by \$200, cash will be increased by \$300, and the difference between these two, \$100, will appear as an increase in surplus. The actual cash received is \$300, but the asset that has been sold was listed on the balance sheet at only \$200. The total assets of the firm have therefore increased by the difference between the asset given up and the asset received in return, namely, \$100. No liability account has increased, and the capital stock has not increased. This increase in total assets must therefore be balanced by an increase in surplus, since surplus is defined as the difference between total assets and the sum of the liabilities and the other proprietorship items. This \$100 increase in surplus is called a capital gain; had it been a decrease, it would have been called a capital loss. Capital gains and losses can also arise when liabilities are paid off for amounts different from those at which they are listed on the balance sheet or when capital stock is issued or withdrawn for amounts different from those at which it is listed. The effect of the sale of machinery discussed above upon the last balance sheet is shown on the balance sheet which follows.

Assets		Liabilities and Proprietorship	
Cash	\$ 1,800	Accounts payable	\$ 2,300
Inventories	2,300	Capital stock and surplus	12,600
Plant and equipment	10,800		
	<hr/>		<hr/>
Total assets	\$14,900	Total liabilities and proprietorship	\$14,900

Capital gains and losses are not the only transactions that will alter the surplus account, however. All ordinary profits and losses will also show up in this account.<sup>1</sup> For instance, suppose the first transaction mentioned above, the sale of product for cash, had been made at a profit of \$100, *i.e.*, the cash received for the sale of the goods was \$100 greater than their cost as listed in the inventory account. This \$100 difference between the increase in cash and the decrease in inventory must appear as an increase in surplus, since no other account has changed. The change in the last balance sheet resulting from such a transaction, in which goods costing \$500 are sold for \$600 in cash, is shown below.

Assets		Liabilities and Proprietorship	
Cash	\$ 2,400	Accounts payable	\$ 2,300
Inventories	1,800	Capital stock and surplus	12,700
Plant and equipment	10,800		
	<hr/>		<hr/>
Total assets	\$15,000	Total liabilities and proprietorship	\$15,000

After these five transactions have taken place, the balance sheet has been considerably altered from its original appearance. Any transaction that takes place will similarly have an effect upon it. Every transaction will alter one or more of the categories of assets, liabilities, or proprietorship.

**THE INCOME STATEMENT.** Many of the transactions into which a firm enters will appear on its income statement as well as on its balance sheet. Transactions involving the sale of products or the costs and

<sup>1</sup> Balance sheets are ordinarily drawn up only once in a relatively long period—say a year—and surplus is increased only by the amount of those profits which are not distributed as dividends.



profits relating to products that are sold will alter the income statement.<sup>2</sup> For example, consider the simplified income statement shown below.

Allocations of Receipts from Sales		Sales	
Cost of goods sold	\$ 9,500	Sales	\$10,000
Materials	\$3,000		
Wages	6,000		
Depreciation and other costs	500		
Profits	500		
Total allocations of receipts from sales	\$10,000	Total receipts from sales	\$10,000

The first transaction discussed above under the balance sheet—the sale of \$500 worth of product for cash, at cost—will also appear on the income statement. Sales, obviously, will increase by \$500. On the other side of the income statement cost of goods sold will increase by \$500. The total amount of cost will be distributed among the various types of cost—wages, materials, and depreciation and other costs. Profits will not be increased, since in this transaction the goods were sold for exactly what it cost to produce them. This transaction will add to the income statement shown above as follows.

Allocations of Receipts from Sales		Sales	
Cost of goods sold	\$10,000	Sales	\$10,500
Materials	\$3,200		
Wages	6,250		
Depreciation and other costs	550		
Profits	500		
Total allocations of receipts from sales	\$10,500	Total receipts from sales	\$10,500

The second transaction discussed above—the purchase of materials on credit—will not appear on the income statement at all at the time

<sup>2</sup> The more complicated case in which income is derived from sources other than sales, *e.g.*, from interest or dividends, is discussed in the appendixes to this and the following chapter.

the purchase is made. However, when the materials are used in the process of production and the output produced with them is sold, they will be entered on the income statement as an element in the costs relating to that sale. Thus, some transactions will reach the income statement only after a delay. Items of costs are frequently incurred long before the goods to which these costs relate are sold, but the income statement deals only with actual sales. Transactions involving payments of costs, therefore, will ordinarily not show up on the income statement immediately but rather will appear some time after they occur, when the goods to which they relate are sold.

The third and fourth transactions discussed above—those involving the issuance of capital stock and the making of capital gains—will not appear on the income statement at all, either immediately or at any future time. They have no relation either to sales or to the costs and profits related to sales. They alter the total assets and proprietorship of the firm, but they do not affect its current income. The distinction between transactions such as these—capital transactions—and current transactions, which do appear on the income statement, will be discussed more fully in the last section of this chapter.

The fifth transaction in the series discussed above—the sale of output at a profit—will appear on the income statement immediately. Its effect will be similar to that shown above for a sale at cost, except that the excess of receipts from the sale over the cost of goods sold will appear as an addition to profits. The sale for \$600 of goods that cost \$500 to produce will alter the last income statement as follows.

Allocations of Receipts from Sales		Sales	
Cost of goods sold	\$10,500	Sales	\$11,100
Materials	\$3,400		
Wages	6,500		
Depreciation and			
other costs	600		
Profits	600		
Total allocations of		Total receipts from	
receipts from sales	\$11,100	sales	\$11,100

All transactions that involve the selling of output, on the one hand, or the incurrence of costs and the making of profits related to sales,

on the other hand, will thus appear on the income statement as well as alter the balance sheet.

### **The Four Aspects of a Transaction**

Every transaction necessarily involves both a buyer and a seller, and each of these must take account of two different aspects of the transaction. The buyer must record (1) that money (or some equivalent) has been given up and (2) that additional goods have been received. The seller, on the other hand, must record (1) that goods have left the firm and (2) that payment for them has been received. These entries on the part of the buyer and the seller represent the four different aspects of the transaction. In the examples discussed above, the firm was the seller when it sold finished goods, exchanging a part of its inventories for cash. On the other hand, when it bought raw materials on credit, it was the purchaser, exchanging a debt (a promise to pay cash in the future) for raw materials inventories. In either case, from the point of view of this one firm, each transaction had two different aspects. Both aspects of each transaction are equally important, and neither can be neglected. To consider the payment received when goods are sold without also considering the reduction in the amount of goods on hand, for instance, is to consider only half of the transaction.

Both aspects of each transaction will appear on the balance sheet; and if the transaction appears on the income statement at all, both aspects will appear there. The sale of goods, for instance, appeared on the balance sheet as an increase in cash *and* as a decrease in inventories. On the income statement this transaction appeared as an increase in sales *and* as an increase in cost of goods sold. The purchase of materials appeared on the balance sheet as an increase in inventories and as an increase in accounts payable. Each of the other transactions, similarly, will be found to appear in at least two places in each set of accounts in which it appears at all.

A transaction may appear in more than two places on the balance sheet or income statement. For instance, a sale that is made partly for cash and partly for credit will appear in three places on the balance sheet of the seller: Inventories will decrease, cash will increase, and accounts receivable will increase. But the transaction still has essentially only two aspects for this firm; the increase in cash and the in-

crease in accounts receivable together represent the payment received for the sale of the good. Their sum will equal the amount by which inventories have decreased, which is the other aspect of the transaction. The good or service bought or sold and the payment for it must always be equal. When goods are sold for exactly what it cost to produce them, this necessity for equality of the two aspects of the transaction raises no problem. When goods are sold for more than they cost to produce, the difference, as was shown above, will appear as surplus (or, on the income statement, profit). The equality of the two parts of the transaction is thus maintained: The value of the goods sold plus the profit on the sale is equal to the payment received. Whenever in any transaction the changes in all the other accounts do not balance, the surplus (or profit) account must be changed so that they will. This is true because changes in the surplus account represent changes in the net value of the proprietorship that can be claimed by the owners of the firm. When assets change without any offsetting change in liabilities, the net value of the proprietorship will have changed.

In summary, then, every transaction will have four complete aspects. In the first place, it will appear in the accounts of two different firms or individuals. In the second place, in the accounts of each of these firms or individuals, it will appear twice, once to show the good or service exchanged and once to show the payment for it. All four of these aspects will be equal, and all four must be shown if the transaction is to be recorded completely.

### **The Relation between the Income Statement and the Balance Sheet**

The transactions that appear on the income statement have been referred to above as current transactions, and those which appear *only* on the balance sheet have been referred to as capital transactions, but the difference between these two has not been made explicit. This section will define more exactly what is meant by the terms "current" and "capital" as applied to transactions.

Some of the transactions into which a firm enters relate only to the productive activity of the current period, whereas others may involve the productive activity of either past or future periods. For example, the payment of wages for work done during the current period on products that are sold during the current period relates only to the

productive activity of this period, both from the point of view of the firm paying the wages and from the point of view of the laborer receiving them. Such a transaction is defined as current for both the firm and the laborer.

On the other hand, the purchase of a machine that is expected to last for, say, ten years is not a current transaction for the firm making the purchase. The machine will be used not only during the current period but during the next ten years as well. The expenditure that is made to purchase it, therefore, must be related to the productive activity of the next ten years as well as that of this year. This expenditure therefore cannot be considered a current transaction. It will appear on the balance sheet, since it will alter the assets of the firm—plant and equipment will increase, and cash will decrease by an equivalent amount. But the total amount of the expenditure obviously cannot appear on the income statement in the current period, since it does not represent in its entirety a cost related to the sales of the current period. Only a small portion—say one-tenth—of the cost of the machine can properly be charged against the sales of this period. This latter amount (called “depreciation”) will appear on the income statement, since it is a current cost showing how much of the value of the machine has been used up in this period as depreciation. A part of the remainder of the total expenditure on the machine will appear on the income statements of each of the next ten years, as the machine is gradually worn out over that period, and will contribute to the production that is sold over that period. From the point of view of the firm that *sells* the machine, however, the situation is entirely different. This firm manufactures machines for sale. For it, the sale of a machine is a current transaction, which relates entirely to the activity of the current period. It will appear on the income statement of this firm as an increase in sales on the one hand and an increase in cost of goods sold (and possibly profit) on the other hand. Thus it is possible for a transaction to be a capital transaction for the buyer and at the same time a current transaction for the seller.

The reverse of this situation is also possible. A transaction may well be a current transaction for the buyer and a capital transaction for the seller. An example would be the sale of an old machine for junk. For the buyer, who deals in scrap iron, the purchase is a current one; it represents the cost of acquiring the inventory from which current sales

are made. For the seller, however, the sale of an old machine has nothing whatsoever to do with current productive activity. Current sales of product and the costs relating to these sales will not be altered in any respect by the sale of the old machine. The transaction is therefore a capital transaction. It will appear on the balance sheet as an alteration in the composition of the firm's assets, but it will not appear on the income statement.<sup>3</sup>

Finally, some transactions are capital transactions for both parties to them. The sale of an existing building by one firm to another firm that expects to continue to use the building for a long period is such a transaction. It will not appear on the income statement of either firm. For the seller, it represents an alteration in the composition of the assets, but it has no relation to current production. For the buyer, the total expenditure on the building will be related to productive activity for a long period to come. Only a small fraction of the cost—current depreciation—can be related to the sales of the current period.

#### SUMMARY

This chapter has shown how transactions will appear in the accounts of the productive unit. The balance sheet has been shown to reflect all transactions into which the firm enters, whereas the income statement shows only the current transactions. The development of the national income concepts and measurements in the following chapters will be based upon these classifications of transactions in the accounts of the productive unit. The balance sheet and the income statement provide a framework within which the operations of the firm can be analyzed and from which a structure of the relationships among firms in the economy can be built up.

The national income concepts and measurements are concerned with the *current* productive activity of the economy. For this reason they will be built up from the income statements of individual productive units rather than from their balance sheets. The transactions that will enter into the formulation of a national income account will

<sup>3</sup> As was pointed out above, if the machine is sold at an amount different from that at which it is listed on the balance sheet, the difference is called capital gain or loss. It is not profit. Profit can arise only from the current productive activity of the firm, *i.e.*, from transactions that appear on the income statement.

be those which appear on the income statements of productive units, *i.e.*, those which are, for at least one of the parties to them, current transactions. Some capital transactions will enter into the analysis, but these will include only those which are capital transactions for one party and current transactions for the other. Transactions that are capital transactions from the point of view of both the buyer and the seller bear no relation to the current productive activity of the economy and so will be excluded from further consideration.

## APPENDIX TO CHAPTER 2. THE BALANCE SHEET AND INCOME STATEMENT

In Chap. 2, extremely simplified examples of a balance sheet and an income statement for a manufacturing corporation were presented. This appendix will present somewhat more complex and realistic versions of both sets of accounts and will explain in somewhat more detail the meaning of each item that appears in the accounts.

### THE BALANCE SHEET

Table 3 gives an example of a balance sheet for a manufacturing corporation. This balance sheet includes a number of items that were not included in the balance sheet given in the text of Chap. 2. United States government securities, prepaid expenses, bad debts, and intangibles have been added to the assets side of the balance sheet; accrued taxes and long-term debt payable within one year have been added to liabilities; and the proprietorship accounts now include both preferred and common stock, as well as reserves for contingencies and surplus. The meaning of these additional categories, as well as of the categories that appeared on the simplified version, will be explained below.

#### The Asset Accounts

**CASH.** The item designated "cash" on the balance sheet includes not only the actual amounts of money in the safes and cash registers of the corporation itself but also the total amounts in its checking accounts in banks. In actual practice only a small portion of the funds listed as cash on the balance sheet is ordinarily held by the company in the form of currency. Since checking accounts represent money available on demand, and since companies make many of their payments by check, checking accounts are considered to be cash.

**UNITED STATES GOVERNMENT SECURITIES.** Corporations that have unused funds may invest them in securities, which will yield a return on their money, rather than hold them in the form of currency or bank deposits. United States government securities can be converted into cash very readily, and their value fluctuates very little. For this reason funds invested in them are practically equivalent to cash. United States government securities are



Table 3. Sample Balance Sheet of a Manufacturing Corporation as of December 31, 19—

Assets		Liabilities	
Cash.....	\$ 222,048.65	Accounts payable.....	\$ 200,738.66
United States government securities, at cost.....	479,319.43	Accrued taxes.....	118,497.24
Accounts receivable:		Long-term debt payable within one year ..	6,324.45
Total.....	\$137,875.67	Bonds and mortgages.....	81,197.16
Less estimated bad debts.....	1,378.76	Total liabilities.....	\$ 406,757.51
Inventories.....	136,496.91		
Prepaid expenses.....	306,745.97	Proprietorship	
Marketable securities, at cost or market, whichever is lower.....	6,138.65	Preferred stock, 7% cumulative, par value \$100 (3,603 shares).....	360,300.00
Plant and equipment:	24,515.70	Common stock, stated value \$75 per share (8,703 shares).....	652,725.00
Cost.....	\$2,568,247.54	Reserves for contingencies ..	142,171.03
Less allowance for depreciation ...	1,741,374.19	Surplus.....	440,186.12
Intangibles.....	826,873.35	Total proprietorship.....	\$1,595,382.15
	1.00	Total liabilities plus total proprietorship ..	\$2,002,139.66
Total assets.....	\$2,002,139.66		

ordinarily valued on the balance sheet at cost; since their value fluctuates so little, a valuation at current market price would be very little different.

**ACCOUNTS RECEIVABLE.** In almost every business, goods are sometimes sold on credit. Actual payment for these sales may be delayed as long as three to six months. At all times, therefore, there will be some uncollected amounts outstanding. The amounts that are owed to the firm are referred to as accounts receivable. Accounts receivable cannot be shown on the balance sheet at their face value, since in all probability some of them will never be paid. Bad debts usually average a predictable small percentage of the total amount of accounts receivable. On the balance sheet shown above an allowance of 1 per cent of total accounts receivable has been made for probable bad debts, and this amount has been subtracted from the face value of accounts receivable to arrive at a valuation for the balance sheet.

**INVENTORIES.** Inventories include a large number of different kinds of goods. (1) They include all types of raw materials and supplies that must be kept in stock if production is to flow smoothly. (2) The firm will ordinarily have a certain quantity of goods in a semifinished state; these will also be included in inventories, as work in process. (3) Inventories include the stocks of finished goods that are necessary so that orders from customers may be filled quickly out of current stock. The problem of estimating the value of these inventories is not simple. Many of the goods were bought or produced at some period in the past, and the present market price may be quite different from what the goods cost when they were purchased. One common method of valuation in such cases is to assign to the goods either the current market price or the original cost, whichever is lower. If the market price has fallen since the good was purchased, it is considered to have lost a part of the value that was paid for it, and this loss is recognized. On the other hand, if the price has gone up, the good is still valued at its original cost because the gain is not considered to have been realized. The major defense of this procedure is that it will never result in overvalued inventories. There are many other ways in which inventories may be valued, but these need not be taken up here.

**PREPAID EXPENSES.** Many of the assets used by a business in the process of production are services that must be purchased some time before they are used but are of such a nature that they are not included in inventories. For example, rent on buildings and machinery may be paid in advance. Similarly, an insurance premium may be paid to purchase protection during a future period. These services are quite similar to raw materials and supplies, in that they are assets which are available for future productive use.

**MARKETABLE SECURITIES.** Marketable securities of various types are purchased for much the same reason that United States government securi-

ties are purchased. The firm may find that in some periods it has funds available in excess of its current needs for cash. It may not wish to use these funds for expansion or to pay them out to the owners. Investing the funds in marketable securities will presumably bring some income to the firm. Unlike United States government securities, most other marketable securities are likely to fluctuate in value and for this reason entail more risk. On the other hand, many of them yield a higher rate of income. Marketable securities are frequently valued at cost or market, whichever is lower, for much the same reason that inventories are so valued.

**PLANT AND EQUIPMENT.** Almost all productive processes require that some plant and equipment be used by the productive unit, and the enterprise ordinarily owns at least part of the necessary plant and equipment. These holdings are referred to as the "fixed assets" of the firm. On the balance sheet these fixed assets are listed at their original cost less an allowance for depreciation. This depreciation allowance represents the amount by which the value of the asset is estimated to have declined since it was originally purchased. Fixed assets are ordinarily expected to last for a period of years and to contribute their services to production all through their life. The purchase of such an asset is thus equivalent to the purchase of a stream of services that will become available during a series of future years. In this respect such a purchase is quite similar in nature to prepaid expenses such as rent or insurance, except that the period covered is ordinarily longer. As the years pass and the asset is used for production, it is slowly worn out, and the quantity of future services that it is capable of yielding becomes smaller. The value of the asset to the firm therefore declines, and the allowance for depreciation measures this decline.

An example may help to clarify this concept. Suppose that a firm purchases a piece of machinery for \$10,000 and that this machine is expected to last ten years and to give equal services in each of these years. At the moment of purchase this machine can be considered equal to \$10,000 worth of prepaid services, which will be available for use in production at the rate of \$1,000 worth each year for the next ten years. During the first year the first \$1,000 worth of services will be used up in production, and at the end of the year \$9,000 worth of prepaid services will still remain. The allowance for depreciation will therefore be shown on the balance sheet at \$1,000, and the net value of the machine at \$9,000. After four years have elapsed, \$4,000 worth of services will have been used up and \$6,000 worth will still remain. The allowance for depreciation would now be shown at \$4,000, and the net value of the machine (the original cost less the allowance for depreciation) at \$6,000.

Estimation of the allowance for depreciation necessarily involves a calculation of how long the asset will continue to yield services. An asset sometimes ceases to yield services because it is worn out. In other cases the asset may still be in working order but may cease to yield services because it is obsolete and therefore useless for production where competition of goods produced by more up-to-date equipment must be met. The latter is especially true of many machines, patterns, and dies; their useful life may be very much shorter than their physical life.

The balance sheet of the manufacturing corporation shown above indicates that the corporation owns fixed assets that originally cost almost \$2.6 million. The corporation estimates that over \$1.7 million worth of the total services of these assets has been used up. This leaves a little over \$800,000 worth of services still available to be used.

**INTANGIBLES.** Intangibles are listed on the balance sheet to remind the reader that there is a body of assets which are difficult to appraise but nonetheless are of real value to the enterprise. A typical example of this type of asset is the trade-mark of a product, which may be very valuable to the producer. It not only may assure the producer of a ready market for his product but may also permit him to obtain a higher price than he otherwise could. Cigarette manufacturers, tooth-paste concerns, and soap companies are all prominently in this position. In addition to trade-marks a firm may have valuable patents or secret processes that are not included with any of the other assets. By valuing all of these intangibles at the nominal amount of one dollar, the corporation is reminding the stockholders and the public that more assets exist than are listed.

### **Liabilities and Proprietorship**

**ACCOUNTS PAYABLE.** Almost every firm buys some goods and services on credit and has at all times some bills that it has not yet paid. On the assets side of the balance sheet accounts receivable showed the amount that various other firms owed to this corporation. In much the same way the accounts payable show the amount that this corporation owes to other firms.

**ACCRUED TAXES.** The liability for some taxes is incurred some time before payment of the taxes becomes due. Corporate profits taxes, for example, do not have to be paid until the year following that in which the taxed profit was earned. Such taxes, which have been incurred but are not yet payable, are called "accrued" taxes. Most firms will also have accrued wages, salaries, interest, and even rents, the liability for which has been incurred but which are not yet due. All these accrued items appear on the balance sheet as liabilities. An obligation does not have to be immediately payable to be classed as a liability.

**LONG-TERM DEBT DUE WITHIN ONE YEAR.** This classification includes bonds and mortgages that will fall due within one year. Like accrued taxes, it represents liabilities that will soon have to be paid.

**BONDS AND MORTGAGES.** Bonds and mortgages are the long-term debt of the corporation. The issuing of bonds, which will be repaid at a fixed future date, and the mortgaging of fixed assets are two of the methods that firms can employ to obtain funds. Funds can also be obtained by borrowing from banks on shorter terms (this would appear as an additional item of liabilities, notes payable) or by the issuance of capital stock. The latter will be discussed below.

**PREFERRED STOCK.** The total proprietorship can be divided into a number of different accounts. Those shown on this balance sheet are among the simplest. Preferred stock may be of a number of different types; the particular one shown here is 7 per cent cumulative, with \$100 par value. The fact that it is preferred means that dividends on it must be paid before any dividends can be paid to common stockholders. The fact that it is cumulative means that if the dividend is skipped in any year, the total cumulated amount of the unpaid dividends must be paid to the preferred stockholders before any dividend can be paid to the common stockholders. The amount of the yearly dividend per share is \$7; this is 7 per cent of the \$100 par value per share. The par value of the stock does not necessarily have any relation to its present market value; it may have had some such relation when the stock was issued, but many influences aside from the stated par value determine the market value of a stock, even when it is first issued.

**COMMON STOCK.** In addition to its preferred stock, this corporation has issued common stock. The stated value of the common stock, like the par value of the preferred stock, bears no necessary relation to its market value. It may have done so when the stock was first issued; but as the years have passed, the corporation has grown and other factors have become important. The present market value of the common stock is affected by the expected future dividends and by the speculative elements of the stock market, among other things.

**RESERVES.** The proprietorship accounts very often contain reserves for contingencies. Their function is to point out to the stockholder that certain unforeseen contingencies may arise which will use up some of the assets. For example, a warehouse that is not fully insured may be destroyed by fire, or an unbonded cashier may abscond with funds. If something of this nature takes place, the reserve for contingencies could be decreased and no other proprietorship account need be affected. Reserves for contingencies are essentially a part of surplus.

**SURPLUS.** The value of the surplus account is determined by subtracting the total of the other proprietorship accounts and the liabilities from the total assets. As was pointed out in the discussion of transactions in Chap. 2, an increase in assets that is not balanced either by an increase in liabilities or by an increase in some other proprietorship account must be balanced by an increase in the surplus account. The surplus account is the balancing item on the balance sheet. Profit that is not distributed to the owners will increase the surplus account unless offset by an increase in some other proprietorship account.

### Summary

The balance sheet is thus a valuation of the assets of the corporation, accompanied by a statement of the claims against these assets. The total value of the assets does not necessarily determine the value of the enterprise, however. There are many types of intangible assets that, although they are very valuable to the enterprise, are not added into the balance sheet. Furthermore, the basic value of a concern is largely dependent upon its ability to make profits in the future, and this is not shown on the balance sheet.

## THE INCOME STATEMENT

Table 4 gives an income statement for a manufacturing corporation. This income statement, like the balance sheet shown in Table 3, is more complex and realistic than that given in the text of Chap. 2. In addition to the items shown there, it includes receipts from dividends, interest, and subsidies and allocations of receipts to bad debt expense and charitable contributions.

### Total Current Receipts

**SALES.** The sales figure shown on the income statement in Table 4 represents the value of products sold at market prices. The term "market prices" is used here because this is the price to the purchasers on the market. This is what is actually paid by those who buy the products. It is not necessarily equal to the list price of the goods sold; discounts are frequently given for large purchases or prompt payment, and other allowances are made for various reasons.

**INTEREST RECEIVED.** The firm may receive interest on notes receivable, bonds of other corporations, and government bonds. It is a common business practice to sell products on credit; but if such service were given without charge, the practice would be equivalent to supplying the purchasers with working capital. There would be no incentive for customers to pay cash or even to pay their notes as promptly as possible. For this reason the producer

*Table 4. Sample Income Statement for a Manufacturing Corporation for the Period January 1, 19—, to December 31, 19— \**

Total current receipts . . . . .	\$1,496,889.69
Total sales of products less discounts and allowances . . . . .	1,479,189.72
Dividends received from holdings of stock in other corporations . . . . .	1,028.75
Interest received on notes receivable, bonds of other corporations, and government bonds . . . . .	12,940.80
Subsidies received from the government . . . . .	3,730.42
Allocated as follows . . . . .	\$1,496,889.69
Cost of goods, materials, and services purchased from other firms . . . . .	580,939.21
Depreciation of plant and equipment . . . . .	68,739.17
Taxes and licenses other than corporate profits taxes . . . . .	37,070.77
Bad debt expense . . . . .	1,285.34
Contributions to charity . . . . .	4,376.55
Cost of social insurance contributions . . . . .	24,586.86
Cost of wages and salaries . . . . .	648,474.33
Interest charges . . . . .	14,777.17
Provision for corporate profits taxes . . . . .	42,000.00
Dividends paid out . . . . .	50,032.64
Undistributed profits . . . . .	24,607.65

\* The particular form of this income statement is similar to that used by many large corporations in reports to their stockholders. The more general accounting forms of income statements were not used here, since the following text does not make use of the classification of income into operating and nonoperating.

will charge interest on his notes receivable. This interest is part of the total current receipts of the corporation. The balance sheet showed that this corporation owned United States bonds, and some of the marketable securities that it owns may be the bonds of other corporations or of state and local or foreign governmental units. Interest will be received on all these types of bonds as well as on short-term obligations such as notes receivable.

**DIVIDENDS RECEIVED.** A part of the marketable securities shown on the balance sheet of the corporation may be in the form of stocks of other corporations, which will yield income in the form of dividends. This income must be included as part of the current receipts of the corporation. Current income is not affected, however, by the purchase or sale of securities during the year. For this corporation the purchase or sale of securities is a capital transaction similar to the purchase or sale of a fixed asset. Gains and losses from such transactions are, as was pointed out in the text of Chap. 2, capital gains and losses. They alter the balance sheet of the corporation but do not enter into the income statement.

**SUBSIDIES RECEIVED.** This item would not appear on the income statements of most manufacturing corporations in the United States. For the most part subsidies in the United States have been given only to agricultural

producers, although after World War II some subsidies were given to building-materials producers. Subsidies are included as a part of the total current receipts of this corporation to show how they would be treated for use in the later development of the national income accounts. Since many other countries do pay subsidies to all types of producers, it is important to understand how they are treated.

### **Allocations of Total Current Receipts**

**GOODS, MATERIALS, AND SERVICES PURCHASED FROM OTHER FIRMS.** Virtually all firms make purchases from other firms in carrying out production. Raw materials, power and fuel, contract work, office supplies, rents, advertising, and all similar payments are included in the classification "goods, materials, and services purchased from other firms." This category is not simply the total of all outlays made to other enterprises during the current period, however. (1) All the materials and services bought in the present period were not necessarily used up in the production of the goods which were sold in this period. Therefore, they should not all be considered as part of the cost of production of these goods. (2) The goods produced in this period may have been the result of outlays or purchases made in a previous period, so that counting only outlays in this period would not include all costs. Most services are used immediately as they are purchased, but materials and some few prepaid services are not; instead they enter into inventories or prepaid expenses. In order to obtain the correct figure for this category, the cost of the goods, materials, and services that actually did enter into the production of the goods that were *sold* during the period must be calculated. This involves calculating (1) the quantity of such goods and services and (2) their value or cost.

A number of methods can be used to estimate the quantity of materials that has been used up in producing the goods sold. Some methods of cost accounting provide accounts that record exactly what materials have been used up in production. If the products sold are known, the producer can determine from his books what materials are recorded as entering into his production. He will thus know the exact amounts of each element used in the production of the goods sold. Another method of calculating the quantity of materials used in producing the goods sold may be termed the "inventory method." Inventories represent the quantities of materials, semi-finished goods, and finished products that are owned by the firm. Both the purchase of raw materials and the sale of finished products will change the amount of inventories the firm holds. The quantity of materials that have been used up in making the products sold can be estimated if inventories at the beginning of the period, purchases during the period, and inventories



at the end of the period are all known. When inventories of materials, semifinished goods, and finished products all remain exactly the same, it can be said that the quantity of materials purchased from other producers exactly equals the quantity of these materials used up in the production of goods sold. Whenever inventories change, the producer must rely on the accountant to adjust the quantity of materials purchased from other producers so that it will correspond to the actual quantity of these items used up in producing the goods that were sold.

After the quantity of goods, materials, and services used in the production of the goods sold has been determined, the problem of how to value them still remains. Since a period of time elapses between the purchase of some of the goods, materials, and services and the sale of the finished products, their prices may have changed. Their original cost will then be different from their present market value. Some businesses use the original cost valuation, and other businesses use current market valuation. Both practices are recognized as quite legitimate if the facts as to the valuation are disclosed and if the practice does not give a false impression for the purpose served by the accounting statement.

**DEPRECIATION.** One aspect of the nature of depreciation has been discussed above in the section on the balance sheet. There it was pointed out that the allowance for depreciation represents the amount by which the value of an asset has declined since it was originally bought. The amount of this decline in value that takes place in any one year represents the cost of using the machine for production during that year; it is termed "depreciation expense" and must be shown on the income statement as a part of the cost of producing the goods sold during the year. A machine when originally purchased does not represent a cost; it is merely a shift of assets from one form to another. But as the machine is used, its purchase price gradually enters into the costs of the stream of goods that is produced with it. When the machine is finally discarded, its total original cost will gradually have appeared as depreciation expense over the years the machine has been in use.

Up to this point depreciation has been regarded as representing the using up of part of the available services of an asset or the extinction of part of the life of the asset. But depreciation has another aspect. When the services of plant or equipment are used up in the process of production, these services are really embodied in the final product. There has been a change in the form of the assets held by the firm, but not a diminution in their total quantity. Production combines materials, machines, and labor into products. Consumption of capital goods in the process of production is,

in reality, a physical transformation of a portion of these capital goods into manufactured products.

**TAXES OTHER THAN CORPORATE PROFITS TAXES.** Any allocation of total current receipts must take into account the taxes, licenses, and fees that have to be paid to the government. Local property taxes will have to be paid on land and buildings owned. Many products, such as tobacco, liquor, fur coats, and in some states all retail purchases, have excise or sales taxes levied on them. Some businesses must pay for government licenses or are subject to government fees in their operations. These are all part of the costs of producing or selling goods, and a business must allocate the necessary amount from total current receipts before it can compute its profits. The corporate profits tax, however, is different in its nature. It is levied on the firm *after* profits have been computed. The corporate profits tax is not a cost of production but rather a tax on the profits of the corporation; therefore it should not be included along with these other taxes in the calculation of the costs of producing the goods that were sold.

**BAD DEBT EXPENSE.** Some of the accounts or notes owed to the firm turn out to be uncollectible, and the firm loses the amount of these bad debts. Looked at another way, the total current receipts shrink by an amount equal to the bad debts. Some of the total current receipts must therefore be allocated to cover this expected shrinkage if the profit figure is to represent a reliable net gain. Bad debt expense can thus be considered equivalent to a cost item, although in most accounting procedure it is treated as adjustment of total receipts.

**CHARITABLE CONTRIBUTIONS.** The Federal corporate profit tax laws permit corporations to deduct a certain amount of charitable contributions from their total current receipts in calculating taxable profits. If such were not the case, charitable contributions would be shown as a part of profits in much the same way that dividends are a part of profits.

**SOCIAL INSURANCE CONTRIBUTIONS.** Both the employers' and the employees' contributions for social insurance are included in this category on the income statement. These contributions are of the same nature as taxes other than corporate profits taxes, but they have not been included with these other payments to the government because they are usually considered a part of the cost of using labor.

**WAGES AND SALARIES.** The cost of wages and salaries, like the cost of goods, materials, and services purchased from other firms, must be determined in relation to the products that were sold during the current period. Wages may have been paid during the period for work on products that had not yet been sold at the end of the period; and similarly, some products may have been sold during the period that were worked on in previous

periods. The problems involved in determining the amount of wages and salaries that should be included as a cost of the goods sold are much the same as those which were pointed out with reference to the cost of goods and materials purchased from other enterprises. The quantity and type of labor used in the production of the goods sold must be determined, and these services must be valued. These problems must be solved, implicitly or explicitly, before the cost of wages and salaries can be computed.

INTEREST. The ordinary operation of the firm will require that it pay interest on its long-term debt, on its notes payable, and on any other money that it has borrowed. In most instances the full amount of interest charges is deducted from total current receipts in calculating profits.

PROVISION FOR CORPORATE PROFITS TAX, DIVIDENDS PAID, AND UNDIS-  
TRIBUTED PROFITS. These three items add up to give the total profits of the corporation. Total profit is the difference between the costs and expenses discussed above and total current receipts; it represents what is left over after the correct amount has been allocated to pay back all the proper costs and expenses. Out of these total profits the corporation must pay the corporate profits tax. Another portion of the profits may be paid out to the stockholders in the form of dividends. The remainder, which will be left in the firm, is called "undistributed" profits.

#### SUMMARY: ACCOUNTS AS TOOLS OF ANALYSIS

Before leaving the accounts of the individual firm, it should be pointed out that the balance sheet and the income statement are frequently used as tools of analysis. As is true with most tools, their form will in large measure depend on the purpose for which they are designed. The income statement, for example, may serve many different purposes. The manager may wish to know the relative profitability of the different items that are produced; for this purpose, product classifications can be made with the cost items allocated as well as possible among these products. On the other hand he may be interested in the relation between manufacturing, administrative, and selling cost, and classifications can be made along these lines. The stockholders might wish to know how much of the profit was obtained from direct operations and how much was nonoperating income such as interest on government bonds; the income and cost accounts could easily be separated to reveal this relationship. At the present time some people are interested in how much of the profit is due to the rising price level—a situation in which a firm sells products whose costs were incurred at lower price levels. This, too, can be shown if the accountant so desires it. The balance sheet, similarly, may be designed to reveal many different relation-

ships. Interest may center about the relative liquidity of the firm; the asset and liability accounts can be drawn up to reveal this. Or the proportion of the assets used in producing various different products might be important, and this could be shown on the balance sheet. Stockholders frequently are interested in the proportion of the assets that have been acquired through the earnings of the firm and the proportion that has resulted from capital transactions. These questions and many more can be answered if the balance sheet is properly drawn up to show the answers.

In other words, there is no necessarily correct form for either the balance sheet or the income statement, although there may be incorrect forms. A form is correct if it shows clearly and accurately what it is intended to show. A so-called general-purpose accounting statement may well be a compromise among many purposes and therefore inadequate for any of them. Presentation of complete detail may obscure relationships as well as add to the information that is given. Like all tools, accounting statements should be designed to fit the needs for which they are intended.

### 3. Production Statements for the Firm and for the United States Economy

#### THE PRODUCTION STATEMENT FOR THE FIRM

##### **The Difference between an Income Statement and a Production Statement**

One of the major functions of the income statement discussed in Chap. 2 was to show the sales of goods and services by a firm and the costs and profits that were related to these sales. This statement is useful to the firm, since it gives a picture of the sources of income and the ways in which this income is allocated to the various elements of costs and profits in a given period. In many instances, however, there is also need for another, somewhat different type of statement. For some purposes the productive activity of a firm over a period, rather than its sales, is important. The economist, for example, is interested in the actual functioning of various parts of the economy and wishes to know such things as the amount of wages paid out over a given period and the quantity of product produced. The income statement cannot answer such questions, since it refers only to the goods *sold* during the period and the wages that can correctly be allocated to these goods.

The aim of the present chapter is to show how a production statement for the individual firm can be obtained from its income statement, and how, in turn, such production statements for firms can be consolidated and combined to yield a production statement for the whole

economy. The usefulness of a production statement for the whole economy is obvious; it will show the total production that has occurred in all firms and productive units in the economy and at the same time the costs and other allocations accompanying such production. Such items as depreciation, business taxes, wages, salaries, interest, dividends, and undistributed profits will all be shown in their relation to each other and to production. The development of such a national income and product account is essential as a first step in describing the activity of the economy in terms of the interrelated transactions that take place.

### **The Relation between Sales and Production in the Firm**

The amount of goods sold by a firm may be quite different from the amount of goods produced by that firm. Most firms have a stock or inventory of finished goods<sup>1</sup> from which sales are made. The process of production adds goods to these inventories, and sales remove goods from these inventories. It therefore follows that when finished goods inventories increase, production in the current period must have added more goods to inventories than current sales have removed. Current production is thus greater than current sales by the amount of the net increase in inventories. Similarly, it is obvious that when inventories are decreasing, current production is adding fewer goods to inventories than current sales are removing, so that current production is less than current sales by the amount of the net decrease in inventories. The net change in inventories, therefore, reflects the difference between sales and production in the firm; it is possible to calculate the actual value of goods produced from information on the value of goods sold and on the net change in inventory. The value of sales plus the net increase in inventories or minus the net decrease in inventories will equal the value of production.

Computing the value of the change in inventories presents some technical problems. In the appendix to Chap. 2 it was pointed out that inventory valuations can be made in a number of different ways. Over a period of time the prices of goods and materials in the economy change, and the same physical amount of inventories may thus be valued differently in different periods. For instance, a producer might

<sup>1</sup> Stocks of goods and materials in process should also be included in inventories. This would complicate the analysis but would not invalidate the principle involved

have 1,000 units of a given good on hand at both the beginning and the end of the year; but if the price of the item went up during the year, he might revalue his end-of-year inventory according to the new level of prices. If the inventory change were calculated simply by taking the difference between the value of the inventory at the beginning of the year and at the end, it would appear that the inventory had increased and that the amount of this increase should be added to sales in deriving the value of production. Such a procedure as this, however, would not correctly represent the production that had taken place and would result in including in profits the gain that was caused by revaluing the inventory to the new price. The specific methods of valuing inventory so that it will correctly reflect the difference between the physical volume of sales and the physical volume of production are discussed at greater length in the appendix to Chap. 5. It is sufficient here to point out that the usual methods of inventory valuation by firms are not entirely satisfactory for this purpose.

#### **The Production Statement as Derived from the Income Statement**

It follows from the above discussion that a production statement for the firm can be derived from the income statement by taking into account the change that has occurred in inventories and the costs and profits that would be related to such change. The change in inventories will appear on the side of the production statement showing sources of total current receipts. If there has been a net increase, it will be added to sales to obtain the value of production; if there has been a net decrease, it will be subtracted from sales to obtain the value of production. On the allocation side the costs and profits will now refer to those goods which have been produced rather than to those which have been sold. The problem of determining the costs and profits is the same as it was for the income statement; the only difference is that a different bundle of goods is being examined. Table 5 shows how the income statement given in Chap. 2 might be revised to present a production statement for the firm.

A comparison of this production statement with the income statement in Chap. 2 will show how the value of the inventory increase was distributed among the various cost and profit elements in the allocations. Depreciation, taxes, and interest are the same on both the income statement and the production statement. This is because

most producers charge as an expense to sales all depreciation and taxes<sup>2</sup> that have been incurred over the period; thus there would be no change in this item. The amount of dividends paid out would also be the same for both the income statement and the production statement. The change in each of the other items on the production statement shows the cost of the increased inventory. The difference between the total of these costs and the market value of the increased

*Table 5. Production Statement for the Firm*

*(In thousands)*

Allocations	Sources
Goods and materials purchased from other firms ..... \$ 640	Sales to Company A. . . . \$ 700
Depreciation... .. 70	Sales to Company B. . . . . 250
Taxes other than corporate profits taxes ..... 40	Sales to Company C. .... 375
Social insurance contributions .... 27	Sales to Company D. .... 80
Wages and salaries. . . . . 695	Other sales..... 110
Interest ..... 15	Inventory increase..... 100
Provision for corporate profits taxes 49	
Dividends paid . . . . . 50	
Undistributed profits..... 29	
Total allocations of value of production... .. \$1,615	Total value of production..... \$1,615

inventory is allocated to undistributed profits and the provision for corporate profits taxes. Thus the two halves of the production statement balance in the same way that the income statement does.

### THE PRODUCTION STATEMENT FOR THE ECONOMY

The production statement for the firm shown in Table 5 forms the basis for developing a measure of the national output. Much as the production statement of a firm is drawn up around the value of its output, a production statement for the economy can be drawn up around the value of national output. The national output in terms of

<sup>2</sup> Under some methods of cost accounting these items are allocated to each unit of production rather than charged entirely to sales during the period. If this procedure is followed, the amounts of these items on the production statement would, of course, differ from their amounts on the income statement.



its market value, *i.e.*, the total market value that has been created by the productive activity of the economy over the period of a year, will be referred to hereafter as the "gross national product." It is this measurement about which the production statement for the economy will be centered.

### **The Production Statement for the Economy as a Consolidated Statement**

Such a production statement would show who purchased the national output and how the receipts from such production were allocated among the various elements of costs and profit in the economy. The economy would be treated as if it were a single firm, which produced goods and paid the various factors of production within the firm for helping in production. To accomplish this, all the production statements of individual firms in the economy would have to be consolidated and combined into one over-all production statement, which would add up to the value of the national output. A similar problem of consolidation often confronts a large corporation that owns many interrelated plants. Income statements are drawn up for each of the individual plants, but from these alone it is very difficult to determine the results of the activity of the whole corporation. A consolidated income statement is needed, and specific accounting procedures have been developed to present such an over-all view of the relation of all of this corporation's plants to the outside market. Such a consolidated statement will, by its very nature, omit certain internal transactions in order to bring out more clearly the relation of the corporation to the rest of the economy. Although these accounting procedures are in many cases complicated and involved, the principles upon which they are based are fairly simple. Before a measure of national output can be drawn up, these principles must be examined further.

### **Value Added**

Up to this point the term "value of production" has been used to refer to the total market value of the products turned out by a firm in a given period. But this total value of production is not always a satisfactory measure of the productive contribution of the firm. The individual firm does not create by its own activity and the activity of

its employees all the market value of its products. Goods and materials pass through many different firms in the process of their manufacture, so that the total value of production for the economy cannot be obtained by adding up the value of production at each stage. This summation would yield the total volume of transactions that is related to the transfer of the goods produced rather than the total value of the output. A good that passed through the hands of a number of firms in the process of its manufacture would increase the value of production of each of these firms by an amount equal to its total value; adding up the value of production of all firms would therefore count this same good a great many times instead of just once. For this reason a measure is needed that will count for each firm only the value it *adds* to the goods it processes.

The value added by a firm, *i.e.*, the value created by the activities of the firm and its employees alone, can be measured by the difference between the market value of the goods that have been turned out by the firm and the cost of those goods and materials purchased from other firms. This measure will exclude the contributions made by other firms to the total value of this firm's production, so that it is essentially equal to the market value created by this firm. The value added measure assesses the net contribution made by each firm to the total value of production; by adding up all of these contributions, therefore, it is possible to arrive at a total for the whole economy that will represent the market value of production.

An example may clarify this concept somewhat. Suppose that a producer buys parts to build radios and assembles these parts in his shop. The total value of the resulting products cannot be attributed to the productive activity of his shop alone. If he pays \$50,000 for the necessary parts and after assembling them into radios finds that he can sell them for \$75,000, he has added \$25,000 to the value of the products that other firms had already produced. His contribution to the value of production is therefore \$25,000. This is the value he has added; it is a measure of the market value of the production that can be attributed to his activity.

Statistics on value added by manufacture are obtained for different industries in the United States by the *Biennial Census of Manufactures*. These statistics are available biennially for the period 1921 to 1939 by industry. They were obtained by asking each manufacturer the total

value of his production and the cost of goods and materials that he purchased from other firms. The derivation of value added from the production statement is shown in Table 6.

*Table 6. Statement of Value Added for the Firm*

(In thousands)

Allocations		Sources	
Depreciation . . . . .	\$ 70	Sales to Company A . . . . .	\$ 700
Taxes other than the corporate profits taxes . . . . .	40	Sales to Company B . . . . .	250
Social insurance contributions . .	27	Sales to Company C . . . . .	375
Wages and salaries . . . . .	695	Sales to Company D . . . . .	80
Interest . . . . .	15	Other sales . . . . .	110
Provision for corporate profits taxes	49	Inventory increase . . . . .	100
Dividends paid . . . . .	50	Total value of production . . . . .	\$1,615
Undistributed profits . . . . .	29	Minus: Goods and materials pur- chased from other firms . .	640
<hr/>		<hr/>	
Total allocations of value added . .	\$975	Total value added . . . . .	\$ 975

The sources side of the production statement is adjusted by subtracting from the total value of production the cost of goods and materials purchased from other firms. The remainder represents the value added by the activity of this firm. On the allocations side the cost of goods and materials purchased from other firms is omitted, and the remaining allocations absorb all the value that has been added.

### **The National Income and Product Account**

It has been pointed out above that the sum total of value added for all productive units in the economy would equal the gross national product and that this is the measurement about which the production statement for the economy will be built. If value added statements are combined for all productive units in the economy, a national income and product account can be obtained. This section will show how such a combination can be carried out.

An analysis of the sales that take place in the economy reveals that the sources side of the national income and product account can be simplified. In combining the sources side of all the value added statements in the economy, it will be found useful to classify sales by type of customer, as follows:

1. Sales to consumers
2. Sales to government
3. Sales to abroad
4. Sales to business firms

Any sale made by a productive unit will fall into one of these groups. The other items that would appear on the sources side of the combined account would be the net change in inventories and the adjustment of total sales to eliminate the goods that productive units have bought for use in their current production. The sources side could therefore be set up as follows:

### National Income and Product Account

#### Allocations

#### Sources

**Sales to consumers**  
**Sales to government**  
**Sales to abroad**  
**Sales to business firms**  
  
**Net change in inventories**  
  
**Minus: Goods and materi-**  
**als purchased for**  
**use in current pro-**  
**duction**  
  
**Gross national product**

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So far, the items on the sources side of the individual value added statements have merely been combined; further simplification of the national income and product account is now possible by a process of consolidation. The goods and materials purchased by productive units for use in further production are either bought from other firms or imported from abroad. Those goods and materials which are bought from other producers in this country are also included, in the account set up above, in the category "sales to business firms." Not all the sales to business firms are of this type, however. Business firms make purchases from other business firms not only to acquire goods and materials for current production but also to acquire machines, buildings, and other productive equipment. Sales to business firms by productive units would thus be of two types: (1) sales to producers on

current account (goods and materials purchased by producers for use in current production) and (2) sales to producers on capital account (goods not intended for current use but rather for use as capital equipment). The sources side could now be classified as follows.

### National Income and Product Account

#### Allocations

#### Sources

	Sales to consumers
	Sales to government
	Sales to abroad
	Sales to producers on current account
	Sales to producers on capital account
	Net change in inventories
	Minus: Goods and materi- als purchased from producers on cur- rent account
	Goods and ma- terials purchased from abroad on current account
	Gross national product

The accounts have now been reduced to comparable groups, and therefore they can be consolidated. Sales to producers on current account are obviously the same thing as the goods and materials purchased from producers on current account; the same transactions are being looked at from two points of view. Subtraction of the latter category from the former will eliminate both entirely. The second category of purchases made for use in current production, purchases made from abroad, can be subtracted directly from sales abroad; this will leave net sales abroad as a remainder.<sup>3</sup> The sources side of the

<sup>3</sup> In actual practice, since producers rarely purchase capital equipment directly from abroad but rather purchase it through importers and other firms, almost all purchases from abroad will be included in this category, and it will almost equal net exports.

national income and product account, therefore, can finally be set up as follows.

### National Income and Product Account

#### Allocations

#### Sources

**Sales to consumers**  
**Sales to government**  
**Net sales to abroad**  
**Sales to producers on**  
**capital account**  
  
**Net change in inventories**  
**Gross national product**

---

The allocation side of the national income and product account follows directly from the allocation side of the income statement, with some minor changes in terminology and the addition of several classifications that do not ordinarily appear on the income statement of a corporation but do appear on other income statements in the economy. The national income and product account is given in Table 7. "Capital consumption allowances" includes for the economy the same items that depreciation charges cover for the firm. In addition to depreciation charges, capital consumption allowances also include accidental damage to fixed capital and capital outlays charged to current expense. Together, these allowances show how much of the past stock of capital has been exhausted in the current period. A more detailed treatment of these different categories is given in the appendix to Chap. 5. "Indirect taxes" are the same as "taxes other than corporate profits taxes," which have been shown on all the previous accounts. The category entitled "income of unincorporated enterprises" is necessary because the national income and product account embraces all activity in the economy; this category may include wages, interest, and profit of the proprietors of such enterprises; but since their accounts are not kept in this form, the total cannot be split up into the appropriate categories.

The production statement for the economy is thus seen to be based on a consolidation and combination of the production statements of individual firms: It gives the total market value of the national out-

put. The sources side of the production statement for the economy shows the relation between the output produced and the output sold to the various purchasers in the economy. The allocation side of the

*Table 7. National Income and Product Account, 1947 \**

(In millions)

Allocations		Sources	
Capital consumption allowances	\$ 13,299	Sales to consumers . . . . .	\$164,755
Indirect taxes. . . . .	18,488	Sales to government. . . . .	27,952
Social insurance contributions. . .	5,588	Net sales to abroad . . . . .	8,898
Wages and salaries †. . . . .	121,913	Sales to producers on capital ac-	
Income of unincorporated enter-		count. . . . .	29,413
prises ‡. . . . .	45,997	Change in inventories. . . . .	618
Net interest §. . . . .	4,293		
Dividends. . . . .	6,880		
Corporate profits taxes. . . . .	11,709		
Undistributed profits. . . . .	11,195		
Adjustments to allocations    . . .	-7,726		
<hr/>		<hr/>	
Total charges against gross na-		Total sources of gross national	
tional product. . . . .	\$231,636	product. . . . .	\$231,636

\* Source: *Survey of Current Business*, July, 1948, pp. 16-17, U.S. Department of Commerce.

† Includes supplements to wages and salaries other than employer and employee contributions for social insurance.

‡ Includes rental income of persons.

§ For explanation of net interest see the appendix to this chapter.

|| These adjustments include corporate inventory valuation adjustment, business transfer payments, subsidies, current surplus of government enterprises, and the statistical discrepancy. In light of their minor importance as a part of the account they are not taken up here but will be explained in the appendix following Chap. 5.

national income and product account shows how the gross national product is split up among the various elements in the economy. The current transactions that have taken place over a period are so consolidated and combined as to reveal the pattern of productive activity that has occurred in the economy. The following chapters will attempt to show the meaning and uses of the national income and product account.

## APPENDIX TO CHAPTER 3. GROSS PRODUCT CALCULATIONS FOR SPECIFIC TYPES OF PRODUCTIVE UNITS

### THE VALUE ADDED AND THE GROSS PRODUCT APPROACHES

In actual practice value added is not used in obtaining gross national product. Value added is not a sufficiently refined measurement to be capable of handling the complicated details that are actually met. Value added by manufacture would, for example, involve some duplication in the total for the economy, since it fails to deduct such items as office supplies and rent and does not face the problem of what to do about receipts and payments, such as interest and dividends, that are not derived from sales. In order to solve all the problems that will be met in considering specific types of productive units, a clearer formulation is needed of exactly what is meant by gross product with reference to the individual productive unit and how this gross product is to be measured. This appendix will define the gross product approach as it might be applied to production statements for different types of productive units and will show how it could be computed in specific instances. The use of this slightly different concept and method of measuring the contribution of a productive unit, of course, does not alter the basic rationale upon which the processes of measurement are based.

The term "gross product" is used by the National Income Division of the Department of Commerce to designate a measure that, like value added by manufacture, applies to productive contribution in terms of market value. It is more generally applicable, however, in that it can cover all productive activity, not only one aspect of manufacturing production. The theoretical concept of gross product is the same for all productive units, but its method of measurement will be found to vary as it is applied to different types of productive units where different problems are met. Instead of focusing attention on the value of production turned out and the cost of goods and materials purchased from other firms, the gross product measurement is concerned with the individual elements on the allocation side of the production statement that are allocated out of the firm's total productive contribution. The payments to the factors of production that are used in the activity of the firm are basic elements in the gross product of the firm; each factor's contribution is counted where it is employed. In addition, such allocations as depreciation, taxes, business transfer payments, and contributions to charity are considered to be allocations made from the unit's total



productive contribution. This approach is the obverse of value added; what the value added approach obtained as a residual by deducting cost of goods and materials purchased from other firms from the total value of production, gross product builds up element by element. For the simple case illustrated by the production statement in the first part of this chapter both methods will result in the same figure. In more complicated cases it will be necessary to examine further what is meant by saying that a factor's contribution is to be counted where it is employed.

## GROSS PRODUCT IN INCORPORATED ENTERPRISES OTHER THAN FINANCIAL INSTITUTIONS

### The Production Statement

The production statement for a general, nonfinancial corporation would be derived from an income statement of the same nature as that shown in the appendix to Chap. 2. It will be remembered that on the sources side of that income statement receipts in the form of interest, dividends, and the subsidies were included in addition to the receipts from sales. These items are listed as a part of the production statement given in Table 8.<sup>1</sup> On the allocation side, the additional items that appeared on the income statement will also appear here.

**COST OF GOODS, MATERIALS, AND SERVICES PURCHASED FROM OTHER FIRMS.** This classification includes many items not included in the Census classification of goods and materials purchased, which was used in deriving value added by manufacture. In the first place, such things as office supplies and incidental expenses (such as travel) are all included in this category. Even more important is the inclusion of all rental payments as services purchased from other firms. For the purpose of computing gross product, anyone who receives rent is considered to be a firm operating in the real estate part of the economy. Unlike value added, the determination of the cost of goods, materials, and services purchased from other firms does not automatically determine gross product. Further analysis of the remaining elements of allocations will be necessary before gross product can be computed.

**PAYMENTS TO THE FACTORS OF PRODUCTION.** Payments for use of the factors of production are defined as a part of gross product. In the case of wages and salaries the reason for the inclusion is clear. Wages and salaries

<sup>1</sup> It should be noted that the total for the production statement no longer represents the market sales value of production. The total on both the sources and allocations sides will be in excess of the market value of the output by the amount of subsidies received.

represent payment for part of the productive activity that took place in the firm, *i.e.*, the services of labor. Similarly, social insurance contributions, which had to be paid to obtain the labor, can be regarded as part of the factor payment for labor by the firm irrespective of the fact that labor does not receive this amount as current income. It is labor cost to the firm even though it is not received by labor. Interest is likewise a factor payment for

*Table 8. Production Statement for an Incorporated Enterprise*

(In thousands)

Allocations		Sources	
Goods, materials, and services purchased from other firms	\$ 640	Sales to Company A	\$ 700
Depreciation	70	Sales to Company B	250
Taxes other than corporate profits taxes	40	Sales to Company C	375
Bad debt expense	1	Sales to Company D	80
Charitable contributions	4	Other sales	110
Social insurance contributions	27	Change in inventories	100
Wages and salaries	695	Interest received	3
Interest paid	15	Dividends received	1
Provision for corporate profits taxes	49	Subsidies received	1
Dividends paid	50		
Undistributed profits	29		
Total	\$1,620	Total	\$1,620

the services of capital. In the production statement shown above interest was received as well as paid. The actual payment that the firm makes for using borrowed capital in its productive activity is the net payment in excess of its interest receipts. Thus the *net* interest paid by a firm, rather than the total interest paid, is used as the measure of the services of the factor capital that have been consumed by the productive activity of this firm and so should be included in its total gross product. The same line of reasoning can be applied to dividends. Dividends received are subtracted from dividends paid to obtain *net* dividends paid. This amount is taken as a measure of the factor payment to be included in gross product. Net dividends paid together with the provision for corporate profits taxes and undistributed profits are considered to be the payments to the factor entrepreneurship employed in creating gross product.

**OTHER ALLOCATIONS OF GROSS PRODUCT.** In addition to the factor payments a part of the gross product created by a firm is allocated to certain

other uses. Among these are the expenses of bad debts, charitable contributions, and taxes other than the corporate profits taxes. These items do not represent a productive contribution distinct from that arising within the firm (as does, for instance, the purchase of goods, materials, and services from other firms), yet they are a part of the total market value of the firm's production. They must therefore be included as a part of the firm's gross product.

**ADJUSTMENT FOR SUBSIDIES.** Table 8 indicates that this firm received subsidies from the government as an aid in supporting production. The total of the allocation side of the gross product account, therefore, will add up to an amount that is in excess of the market value of production by the amount of the subsidies. If this total is used as a basis for estimating gross product in market value, the result will be greater than gross product by the amount of the subsidies received by the firm. For this reason it will be necessary to adjust the allocations downward by the amount of the subsidy if they are to reflect accurately the market value of gross product.

### Gross Product Account

Table 9 gives the gross product account derived from the production statement shown in Table 8.

*Table 9. Gross Product for an Incorporated Enterprise*

*(In thousands)*

Allocations		Sources	
Depreciation .. . . .	\$ 70	Sales to Company A. . . . .	\$700
Taxes other than corporate profits taxes. . . . .	40	Sales to Company B . . . . .	250
Bad debt expense . . . . .	1	Sales to Company C . . . . .	375
Charitable contributions. . . . .	4	Sales to Company D. . . . .	80
Social insurance contributions . . . . .	27	Other sales . . . . .	110
Wages and salaries . . . . .	695	Change in inventories. . . . .	100
Net interest. . . . .	12	Minus: Cost of goods, materials, and services purchased from other firms. . . . .	-646
Provisions for corporate profits taxes. . . . .	49		
Net dividends paid. . . . .	49		
Undistributed profits. . . . .	29		
<hr/>		<hr/>	
Total. . . . .	\$976		
Minus: Subsidies received. . . . .	-1		
<hr/>		<hr/>	
Total gross product. . . . .	\$975	Total gross product. . . . .	\$975

The cost of goods and materials and services purchased from other firms is not included on the allocations side of the gross product calculation, since it is not a part of gross product. The other items of allocations remain the same as they were on the production statement, except for interest and dividends, which are adjusted in the manner discussed above: Interest received by the firm is subtracted from interest paid in order to obtain the net interest paid by this firm, and dividends received are deducted from dividends paid in order to obtain net dividends paid. Finally, subsidies are subtracted from total allocations, so that the total will equal the gross product at its market valuation.

To make the same adjustments on the sources side of gross product that were made for the allocations side, the same subtractions must be made. This means that the cost of goods, materials, and services purchased from other firms must be subtracted, together with interest received, dividends received, and subsidies received. The remainder will be total sales plus or minus inventory change, minus the cost of goods, materials, and services purchased from other firms.

#### GROSS PRODUCT IN FINANCIAL INSTITUTIONS

Problems arise in calculating gross product for financial institutions because of the treatment of interest and dividends. The interest and dividends received by such institutions often exceed the interest and dividends that they pay out. If the procedure outlined in the previous sections is followed, gross product for these institutions might then be negative. For the answer to this dilemma, further study of these accounts will be needed.

#### **Imputed Interest as a Payment in the Form of Services**

Financial institutions such as banks, insurance companies, and building and loan companies are quite different from other enterprises. They usually sell their services indirectly. A commercial bank receives deposits that it may, in turn, lend out or use to buy securities yielding income. In return for the use of such deposits the commercial bank provides banking services. A depositor may write checks on his account; and if his account is large, he may be permitted a large number of checks without having to pay any service charge. On the other hand, if his account is small, he may have to pay a service charge for every check he writes. Thus the bank pays its depositors for the use of their money by allowing them to draw checks on their accounts; it performs a service to the depositors in exchange for the use of their money. By paying the depositors interest on all the money deposited and at the same time charging each depositor a service charge

*Table 10. Income Statement for a Commercial Bank**(In thousands)*

Allocations		Sources	
Goods and services purchased from other firms.....	\$ 40	Interest received on loans and securities.....	\$200
Depreciation .....	10	Dividends received on stocks held ..	50
Taxes other than corporate profits taxes.....	40	Payments of service charges by depositors.....	115
Bad debt expense.....	5	Other income.....	35
Contributions to charity .....	5		
Social insurance contributions.....	10		
Cost of wages and salaries.....	195		
Interest paid.....	30		
Provision for corporate profits taxes..	25		
Dividends paid.....	30		
Undistributed profits.....	10		
Total allocations of income ... ..	\$400	Total income.....	\$400

*Table 11. Production Statement for a Commercial Bank Showing Imputed Payments**(In thousands)*

Allocations		Sources	
Goods and services purchased from other firms .....	\$ 40	Interest received on loans and securities.....	\$200
Depreciation.....	10	Dividends received on stock held.....	50
Taxes other than corporate profits taxes.....	40	Payments of service charges by depositors.....	115
Bad debt expense .. .	5	Other income.....	35
Contributions to charity.....	5		
Social insurance contributions.....	10		
Wages and salaries .. .	195		
Interest paid .....	30		
Provision for corporate profits taxes..	25		
Dividends paid.....	30		
Undistributed profits.....	10		
Imputed interest and dividends paid to depositors.....	250	Imputed payments of service charges by depositors.....	250
Total.....	\$650	Total.....	\$650

according to the number of checks he has drawn, the bank could have made all the transactions that are going on *explicit* rather than *implicit*. The result of this procedure would be identical with the current practice, but it would make the function of the bank more explicit, so that it could readily be seen that the bank is selling a product—checking services for the individuals and firms who have accounts in the bank.

The income statement for a bank shown in Table 10 does not explicitly reveal what has actually taken place, namely, that the depositors have received payment for the use of their money in the form of banking services rather than cash.

In order to develop a production statement that would make all the transactions explicit, it would be necessary to treat all interest and dividends which the bank receives as if they were paid to depositors and as if the depositors, in turn, paid this same amount of money to the bank for rendering banking services. These two sets of transactions, although they do not actually take place, can be imputed to the bank and to the depositors. These imputed payments have been added to the two sides of the production statement shown in Table 11.

The amount of the imputed interest and dividends paid to depositors is exactly equal to the interest and dividends received by the bank, and the amount of imputed payments by the depositors is, of course, equal to the imputed interest that they receive. Once the adjusted production statement has been obtained, it is a simple matter to obtain a gross product account by following the procedure that has been set up for the general corporation. This is done in Table 12.

*Table 12. Gross Product Statement for a Commercial Bank*  
(In thousands)

Allocations		Sources	
Depreciation . . . . .	\$ 10	Payments of service charges by depositors . . . . .	\$115
Taxes other than corporate profits taxes . . . . .	40	Other income . . . . .	35
Bad debt expense . . . . .	5	Imputed payments of service charges by depositors . . . . .	250
Contributions to charity . . . . .	5	Minus: Goods and services purchased from other firms . . . . .	-40
Social insurance contributions . . . . .	10		
Wages and salaries . . . . .	195		
Net interest paid . . . . .	30		
Provision for corporate profits tax . . . . .	25		
Net dividends paid . . . . .	30		
Undistributed profits . . . . .	10		
Total gross product . . . . .	\$360	Total gross product . . . . .	\$360

When interest and dividends received are subtracted from interest and dividends paid out, the imputed interest and dividend payments to depositors will exactly cancel the total dividends and interest received by banks, so that the interest and dividends actually paid out by the bank become the net interest and dividend payments. The remaining adjustment to the allocation side, the omission of goods, materials, and services purchased from other firms, is the same as for the general corporation. On the sources side the subtraction of interest and dividends received by the bank leaves as the sources of gross product the actual payments of service charges by depositors, other income, and imputed payments by depositors, from which, as before, the goods and services purchased from other firms must be deducted.

### **Effect of Imputed Interest on the Gross Product of the Depositors**

This treatment of imputed interest received by depositors and imputed service charges paid by depositors obviously affects the production statements of the depositors as well as that of the bank. If the depositor is a business firm, the imputed interest received on deposits will appear on the sources side, and on the allocation side a corresponding increase in the services this firm is purchasing from other firms will appear. An alteration of Table 8 to show the effect of imputed interest and imputed service charges on the firm's production statement is given in Table 13.

The totals for both sources and allocations are larger than they were in Table 8 by the amount of the imputed interest and imputed service charges. Gross product, however, is smaller (see Table 14).

Net interest is now smaller than it was before, since imputed interest received as well as actual interest received is subtracted from the interest paid to obtain net interest. The item "goods, materials, and services purchased from other firms" has increased, thus making the gross product contribution of this firm less than before.

A depositor who is a private individual would also have his accounts altered by the imputed interest and imputed service charges. The imputed interest would increase his personal income, and the imputed service charges would be an equal addition to his expenditures. Thus the problem of interest can be handled for financial intermediaries such as commercial banks, mutual banks, building and loan associations, credit unions, investment banks, and similar institutions.





**Imputed Interest as Withheld Interest Payment**

Imputed interest payments of the type discussed above are not the only type of imputed interest of which account must be taken. Certain financial institutions, such as life insurance companies, mutual banks, savings and loan associations, and credit unions, may receive interest and dividends that accrue to the accounts of the participants but are not currently paid out by the financial intermediaries to individuals in the form of monetary interest payments. This income which is not paid out is treated as imputed interest accruing to the participants. Once this adjustment has been made, the gross product measurements may be carried through in much the same way as has been shown above.

The attention given to the problem of interest is out of proportion to its importance in the gross national product, but it is important to have some knowledge of the various imputations if the allocation of net interest in the economy and the place of financial institutions in the national income and product account are to be understood.

**UNINCORPORATED BUSINESS ENTERPRISES**

The ordinary unincorporated enterprise does not pose any special problems, except that the titles of some of the accounts on the allocations side of the income statement will be different and certain items will never appear on the sources side. Since many unincorporated enterprises are owned by proprietors who contribute their own efforts to the organization, the net return realized by the firm may be a combination of wages, salary, interest, rent, and profit. Unlike the corporation there will be no dividends, corporate profits taxes, or undistributed profits. After all other appropriate allocations have been made, the remaining amount will be termed "net income of proprietor." Personal taxes on this income are not considered to be an allocation by the business but rather an allocation by the proprietor as an income receiver. On the sources side, the unincorporated business enterprise will not receive either interest or dividends. All such payments will be treated as part of the personal income of the proprietor rather than part of the gross product of the firm.

Aside from these minor problems of classification and definition, certain distinct problems do arise for special types of unincorporated enterprises. Two of these will be considered below to show the general principles of treatment involved.

### Unincorporated Farm Enterprises

The farmer, operating a farm that he owns or rents, is an example of a common type of unincorporated enterprise in the United States. Calculating the gross product for a farm enterprise involves a consideration of more than just the monetary income statement for the farm. Some of the production of the farm is never sold but is consumed by the farmer and his family; if only the production that is sold and its related costs were considered, the actual value of production and its allocation would be understated. Furthermore, the farmer receives the productive services of the farmhouse he lives in and, in turn, must make allowance for the depreciation and other expenses of his house. Although these do not represent cash income, they are, nevertheless, output that would have a value on the market if it were sold, *i.e.*, if the home-consumed products were sold or if the house were rented. They must therefore be included in the production statement. Adjustments for these elements as well as the usual adjustments for inventory changes have been made in the production statement shown in Table 15.

*Table 15. Production Statement for an Unincorporated Farm Enterprise*

Allocations		Sources	
Goods, materials, and services purchased from other firms.. . . .	\$ 300	Sales of farm products .. . . .	\$2,750
Depreciation (farm equipment, buildings, and house).. . . .	150	Change in farm inventories .. .	50
Taxes .. . . .	100	Imputed value of farm products consumed.....	850
Wages .. . . .	1,000	Imputed gross rental value of farmhouse.....	250
Interest.....	50	Agricultural subsidies....	200
Net income of proprietor .. . .	2,500		
Total.....	\$4,100	Total.....	\$4,100

The imputed value of the farm products consumed is obtained by taking the value (at prices received by the farmer) of the estimated home consumption of farm products. The taxes shown on the allocation side do not include personal income taxes, since as was pointed out above personal income taxes are considered to be an allocation of personal income rather than of the income of the unincorporated enterprise. The allocation to wages includes those payments in money and in kind which the farmer makes for

his hired labor. The calculation of gross product from this production statement can be carried out for the farm enterprise following the procedure outlined above for the general corporation.

### Unincorporated Lessors of Real Property

All lessors of real property are considered business enterprises. Anyone who rents any building or property that he owns is treated as operating an enterprise that contributes to gross national product. The gross rental received for renting the building or property represents the sources side of the total value of production for the enterprise, and the expenses, depreciation, taxes, and net rental income represent the corresponding allocations. This is shown in Table 16.

*Table 16. Production Statement for an Unincorporated Lessor of Real Property*

Allocations	Sources
Goods, materials, and services purchased from other firms for maintenance . . . . . \$ 150	Gross rents received..... \$1,200
Depreciation..... 400	
Taxes . . . . . 450	
Interest . . . . . 50	
Net rental income of owner . . . . . 150	
Total..... \$1,200	Total..... \$1,200

The derivation of gross product from this production statement again follows the usual procedure.

As a corollary to the treatment of unincorporated lessors of real property, it follows that owner-occupied houses also yield gross product, although the services of these houses do not appear on the market. The owner, instead of receiving net rental income from the house, receives imputed net rental income in the form of the services that the house gives to him. For this reason all owners of houses must be treated as lessors of real property, having production accounts such as Table 16. The only difference from Table 16 would be that the gross rents received on the sources side would appear as "imputed gross rent" and the net rental income of the owner on the allocations side would also be imputed. In the personal accounts of the owner the imputed rental income would be added to personal income and the imputed gross rental paid would be added to expenditures.

## GOVERNMENT ENTERPRISES AND GOVERNMENT AGENCIES

### Government Enterprises

The government contains some productive units the products of which are sold on the market. Post offices, local water departments, and publicly owned power stations all sell their products and services to the public. These productive units are classed as government enterprises. The derivation of the gross product account for such government enterprises raises no special problems. On the sources side products and services and the change in inventories are valued at their market prices. Any funds received by the enterprise from the government that are not in return for goods and services sold and any interest received by the enterprise are not considered a part of gross product. On the allocations side most of the items found on the gross product statement for a business firm will appear. A few of the items, such as depreciation and profits, are not applicable, and one new item, current surplus, will appear instead of profits.

### Government Agencies

There are many government productive units that are not enterprises, in that they do not sell their products on the market but rather give them to the public. Examples of such groups are the police and fire departments, the public schools, and the Federal government agencies. These productive units cannot be so simply treated. They do not sell their products on the market, so that the market valuation, the basic element in measuring gross product, is lacking. But to omit such goods and services from the measurement of production in the nation would be to understate gross national product. For this reason another method of measurement has been devised by the Department of Commerce. A government productive unit would have a tabulation of its total receipts and disbursements even though it does not have a production statement derived from the market evaluation of production. The disbursements side of this statement would be quite similar to the allocation side of a production statement. From these disbursements a substitute measure of gross product can be derived for those government units which are not included as government enterprises. Table 17 gives a consolidated receipts and expenditures account for government other than government enterprises.

Receipts are disregarded in calculating the gross product for the government, and attention is focused on the allocations. The goods, materials, and services purchased by the government from other firms and from abroad are obviously not a part of the gross product of the government. Transfer

payments and subsidies paid by the government, similarly, represent allocations that do not contribute to the value of the gross product created by government agencies. The payment of net interest by the government, finally, does not necessarily represent a factor service that is embodied in current government production. The exclusion of this net government interest paid from the government gross product makes the gross product measurement conform better to the commonly accepted idea of current

*Table 17. Consolidated Government Receipts and Expenditures  
Account for 1947 \**  
(In millions)

Allocations	Sources
Goods, materials, and services purchased from other firms and from abroad (net) . . . . . \$11,189	Personal tax and nontax receipts . . \$21,621
Wages and salaries † . . . . . 16,763	Corporate profits tax accruals . . . 11,709
Transfer payments . . . . . 11,064	Indirect business tax and nontax accruals. . . . . 18,488
Net interest paid. . . . . 4,439	Contributions for social insurance. . 5,588
Subsidies minus current surplus of government enterprises . . . . . -126	Less surplus. . . . . -14,077
Total . . . . . \$43,329	Total . . . . . \$43,329

\* Source: *Survey of Current Business*, July, 1948, Table III, p. 14, U.S. Department of Commerce.

† Includes some supplements to wages and salaries.

production. This is the view taken by the National Income Division of the Department of Commerce when they point out

As the bulk of the government debt was created to finance wars and current expenditures, most writers in the national income field believe that interest on such debt does not represent currently produced goods and services or the current use of economic resources. For example, it seems sensible that a comparison of prewar and postwar volume of production should not be distorted by continuing interest on the national debt which arose during the war.<sup>2</sup>

Payments of wages and salaries, however, would be considered part of the government's gross product, since the government has used up in its

<sup>2</sup> "National Income," supplement to *Survey of Current Business*, July, 1947, p. 11, U.S. Department of Commerce.

activity an equivalent amount of labor and this labor is embodied in the services and products that have been created by the government's activity. Thus the gross product of the government is measured solely by the amount of compensations that it pays to its employees. In Table 17, this amounted to \$16,763 million for 1947. The production of the government productive units that do not sell their products on the market<sup>3</sup> is thus valued in terms of cost.

### HOUSEHOLDS

Although households are primarily consuming units, they can also be regarded as creating gross product, since the services of housewives, servants, and borrowed capital may all be used to create goods or services that are consumed by the household. As was true for the government, no market value measure exists whereby the gross product of the households can be evaluated, so that reliance must be placed on the study of the factors of production. It is not feasible to evaluate the services of the housewife either in cost or in market value, and for this reason the Department of Commerce omits them from the gross product of households. The remaining two elements, the services of servants and services of borrowed capital, are valued at cost, and their total is the measurement of gross product that originates in households.

<sup>3</sup> State universities and hospitals may make some charge for their services, but they are not considered government enterprises because the amount charged is not intended to cover the cost of services rendered. Gross product for private welfare and charitable institutions is evaluated in a manner similar to that discussed for government agencies, with the additional consideration that the depreciation which occurs in these institutions is included as a part of the gross product that originates in them.

## 4. Net National Product, National Income, and Personal Income

Once the concept of the national income and product account has been developed, it is possible to derive further measures that are also useful in analyzing production. Different measurements need not be contradictory; instead they may very well show different aspects of the same thing. No one measure is adequate for all purposes, since it can show things from only one point of view. Just as height and weight are different measurements of size, so there can be different measures of production, which consider output from different points of view. New measurements and different aspects of production will be discussed in this chapter, and their conceptual basis as related to the national income and product account will be explained. By this method it is hoped to bring about an understanding of the different measures of production that are currently computed as a part of the national income statistics.

### NET NATIONAL PRODUCT

The national income and product account given in Table 18 is identical with that already shown in Table 7 of Chap. 3. This table is constructed so that its columns total the market value of the production in the economy; the gross national product is portrayed on the one hand as equal to the sum of the allocations that are listed and on the other hand as equal to total sales and inventory change. By

considering different elements on the allocation side of the national income and product account, different measures of production can be derived. The concept of net national product will be derived by the consideration of capital consumption allowances.

*Table 18. National Income and Product Account, 1947 \**

(In millions)

Allocations		Sources	
Capital consumption allowances	\$ 13,299	Sales to consumers	.... \$164,755
Indirect taxes	18,488	Sales to government	. . . . 27,952
Social insurance contributions	5,588	Net sales to abroad	.. 8,898
Wages and salaries †	121,913	Sales to producers on capital account	..... 29,413
Income of unincorporated enterprises ‡	45,997	Change in inventories	... .. 618
Net interest §	4,293		
Dividends	6,880		
Corporate profits taxes	11,709		
Undistributed profits	11,195		
Adjustments to allocations	-7,726		
Total charges against gross national product		Total sources of gross national product	
\$231,636		\$231,636	

\* Source: *Survey of Current Business*, July, 1948, Tables 1 and 4, pp. 16-17, U.S. Department of Commerce.

† Includes supplements to wages and salaries other than employer and employee contributions for social insurance.

‡ Includes rental income of persons.

§ For explanation of net interest see the appendix to Chap. 3.

|| These adjustments include corporate inventory valuation adjustment, business transfer payments, subsidies, current surplus of government enterprises, and the statistical discrepancy. In light of their minor importance as a part of the account they are not taken up here but will be explained in the appendix following Chap. 5.

### Capital Consumption Allowances

Capital consumption allowances were described in the previous chapter as an estimate of the amount of capital goods used up by the economy during the current period. For the individual firm the major item of capital consumption is the depreciation of plant and equipment, and it is here that the nature of capital consumption allowances can be seen most clearly. The producer purchases plant or equipment in order to obtain its services over a relatively long period. To charge correct depreciation to the expenses of production, the productive



life of the capital good must be estimated accurately so that the cost of the services yielded by the capital good during the current period can be computed. Since capital goods are goods that have been produced in the past, it is correct to say that the depreciation charged represents an estimate of the amount of past production available in the form of productive services for use in the current period. When these productive services become embodied in output, it may be said that the decrease in capital goods has contributed to production. The form of economic goods in the economy has changed; a portion of the capital goods has been turned into output. If the productive services of capital go unutilized, there will still be a decrease in the capital goods available for use, but the productive services that are available will be wasted. Depreciation allowances will be the same when this happens as if the services of the capital had been utilized. The normal decline in the amount of the future services of capital, rather than the amount of the capital services actually utilized, is the measure of depreciation allowances.

Capital consumption allowances for the economy are calculated in like manner. Instead of estimating the amount of capital services that go into production in the economy capital consumption allowances show how much the stock of capital goods existing at the beginning of the period declined for normal reasons during the period.<sup>1</sup> In addition to the depreciation allowances calculated by producers accidental damage to fixed capital is also customarily included. Although such accidental damage is not usually normal for the particular producers who bear it, it is quite normal for the economy as a whole to have such damage. Every year, fire, flood, tornadoes, and accidents cause damage to property, the amount of which is to a very large extent predictable and can be considered as part of the total cost of producing in the economy.<sup>2</sup> Thus capital consumption allowances show the amount of the previously existing stock of capital goods that has been used up normally in the present period and thereby has per-

<sup>1</sup> This is not true of capital outlays charged to current expense. For discussion of this item see the appendixes to Chaps. 5 and 11.

<sup>2</sup> Cases of extremely large amounts of damage to fixed capital, *e.g.*, the Chicago fire, would not be considered a part of the accidental damage to fixed capital, since they would be greater than the amount that is normal for the economy. Such large catastrophes would be capital losses and would not appear on the national income and product account.

mitted current production to take place. Without capital goods, current production could not occur. This consumption of capital goods represents the contribution of past production to the production that occurs in the present.

### **Net National Product as a Measure of Current Production**

Gross national product is thus created at the expense of using up some of the previous stock of capital goods. As production occurs, the existing stock of capital goods is drawn down to help carry out production. The gross national product, therefore, contains the contribution of past production. When this contribution (measured by capital consumption allowances) is subtracted, the remainder is termed "net national product." The implications of this measure can best be seen by considering three concrete applications for which the gross national product concept cannot be used.

In the first place, the gross national product does *not* represent the net economic gain realized in the process of production. Current production has been able to take place only by using capital goods that were produced in the past. That production over and above the capital consumed (net national product) will more nearly reflect the net gain that has occurred through production. Gross national product *minus capital consumption allowances* represents the net gain to the economy during the current period, since it shows market value of the output that exists over and above the market value of the capital goods used up. It represents what would remain if all the capital goods used up were replaced out of the total gross national product.

Second, the contribution of the current period is not accurately shown by gross national product, since it admittedly contains the contribution of past production. Net national product again agrees with this concept more closely, since by deducting from total output an amount sufficient to keep the stock of capital goods intact, it shows the market value attributable to current productive activity rather than the total market value including that resulting from converting past production into a different form.

Finally, gross national product added up for a series of years would not give a correct total for output over a period. If capital goods are included in the year they are originally produced and again in the years when their services become embodied in output, such a cumula-

tive gross national product figure would count capital goods twice. Net national product, on the other hand, does not include the services of capital goods in measuring current production, so that when added up for a period of years it does not include double counting of capital goods.

Net national product is thus a measure of *current* production in the sense that such production is due to the activities of the current period and does not include the services of capital goods produced in the past. It is in terms of market value, yet it cannot be represented as any specific body of goods. It is the result of an adjustment made to the gross national product by deducting the estimated amount of capital goods that have been consumed in the current period. Looking at it from the allocation side of the national income and product account, it is the sum of all the allocations with the exception of capital consumption allowances.

## NATIONAL INCOME

### Market Value and Factor Cost

Gross national product is the national output valued in terms of the market prices. Net national product, which has just been derived by adjusting the gross national product for capital consumption, is also in terms of market value. Up to this point in the discussion no alternative method of evaluating production has been mentioned. However, it would be quite possible to value either an individual firm's output or the total national output at what it *costs* in terms of the factors of production rather than at what it brings on the market. Such a valuation in terms of *factor cost* could be used to show how the productive resources of the economy are utilized in various types of production.

An example may help to clarify this point. In 1947 the tobacco-manufacturing industry produced tobacco products that it was able to sell on the market for about \$3.0 billion. The goods, materials, and services that it bought from other producers to make these tobacco products cost about \$1.0 billion. Therefore the manufacturers added about \$2.0 billion of market value to the goods they purchased from other producers; this is the gross product of the industry valued at market prices. But these tobacco products did not cost \$2.0 billion to

produce in terms of the factors of production that went into them. Tobacco products are heavily taxed, and the manufacturers paid over \$1.5 billion in Federal and state excise taxes alone. Of the amount remaining to the manufacturers (about \$0.5 billion) a little less than \$0.4 billion was available for allocation to the current factors of production, including profits. In other words the contribution of the tobacco industry was valued at about \$2.0 billion on the market, yet in terms of the cost of the current factors of production used this contribution was worth less than \$0.4 billion. Some of the allocations of the market value of output do not go to pay the factors of production. Indirect business tax and nontax liability to the government, such as excise and sales taxes, are a legally required payment rather than a cost incurred by the producer for employing a factor of production. Social insurance contributions and taxes on the factors of production, it should be noted, are a part of the factor cost to the producer. He must pay them only if he hires the specific factor of production; therefore they are a cost of using this factor of production. Such direct levies are quite different from indirect taxes. The indirect taxes do not fall on any specific factor of production and so cannot be considered part of the cost of hiring any specific factor. In addition to indirect tax and nontax liability there are certain other minor allocations of this nature. These have been included by the item termed "adjustments" and are explained in the appendix to Chap. 5. Production valued at factor cost counts only those allocations which are payments to the factors of production. In terms of the national income and product account shown in Table 18, indirect taxes as well as capital consumption allowances would have to be excluded.<sup>3</sup> What remains is essentially net national product valued at factor cost rather than at market value.

### **Net National Product at Factor Cost as National Income**

Net national product at factor cost is equal to the amount paid to the factors of production. Production has yielded value, a part of which is paid out as income to the factors that helped to make it. For this reason net national product at factor cost can be considered as the *factor income* originating from production or, more briefly, for the

<sup>3</sup> For treatment of the various adjustment items see the appendix to Chap. 5.

nation as a whole, *national income*. From the above discussion it is apparent that there are three ways of viewing this national income.

First, national income may be thought of as factor cost. This is the cost of employing factors to create goods and services. The relative use of resources by any one industry can be obtained by adding up the cost of the factors of production that the particular industry employs. In this manner it is possible to study the pattern of resource allocation in the economy and find where the productive power of the economy is being used. The total national income measure would from this point of view represent the total cost price of the productive power of the economy.

Second, national income may be thought of as payments of income to the factors of production. Factor income originating in specific industries would show where the national income comes from. Factor income by type of payment would show the relative amounts going to wages, salaries, interest, rent, and profits. Total national income from this point of view would be the total factor income created by the process of production.

Finally, national income can be thought of as the result of a further adjustment of gross national product to reduce the valuation of output to factor cost rather than market value. An adjustment was first made to obtain a measure of *current* production, net national product, by subtracting the capital consumption allowances from gross national product. In order to reduce the valuation of current production to factor cost, indirect tax and nontax liability to the government must also be subtracted, since these do not represent a factor payment.

Thus, national income is both the factor cost of current production and simultaneously the factor income in the economy. By studying the relation between the types of factor payments and where in the economy these payments originate, much may be learned about the nature of the economy. Gross national product, net national product, and national income are all different ways of evaluating production in the economy; it is not a question of which is the better measurement but rather which measure is applicable to the specific problem being studied.

## PERSONAL INCOME

### The Difference between National Income and Personal Income

National income is the income of the factors of production, but it is not the income that individuals actually receive. On the one hand, part of national income is never paid out to individuals. Social insurance contributions, for instance, are considered part of the factor income of labor, but labor does not actually receive these payments; they are paid directly to the government. Similarly, corporate profits taxes are considered a part of the factor share of the owners of the corporation, but they are not received by the owners. Instead, they too are paid directly to the government. Also, undistributed profits of corporations are not actually paid out and individuals do not actually receive them, although they are considered a part of the factor income that is allocated to the stockholders of the corporation. All these elements would have to be excluded to obtain the actual personal income that individuals receive. On the other hand, individuals receive some income other than that from factor payments. Both government and business firms may make payments to individuals for reasons other than payments for services rendered. For example, the government may make relief payments or give bonuses to veterans, and business may make charitable contributions or give out prizes for advertising purposes. These are all payments which individuals receive for reasons other than current services rendered. They are, in other words, nonfactor payments<sup>4</sup> received by individuals and must be included as a part of personal income.

Personal income thus excludes those factor payments which are not received by individuals and includes all nonfactor payments that are received by individuals. The resulting total shows the actual amount of income received by individuals in the economy. In Fig. 1 the interrelations among all of the national income measurements that have been discussed (gross national product, net national product, national income, and personal income) are shown.

The first block in Fig. 1<sup>5</sup> contains exactly the same elements that

<sup>4</sup> For the treatment of interest on the government debt as a nonfactor payment see the appendixes to Chaps. 3 and 5.

<sup>5</sup> As was true for Table 18, the minor adjustment items have been omitted in these diagrams. For detailed explanation of the various adjustments see the appendix to Chap. 5.

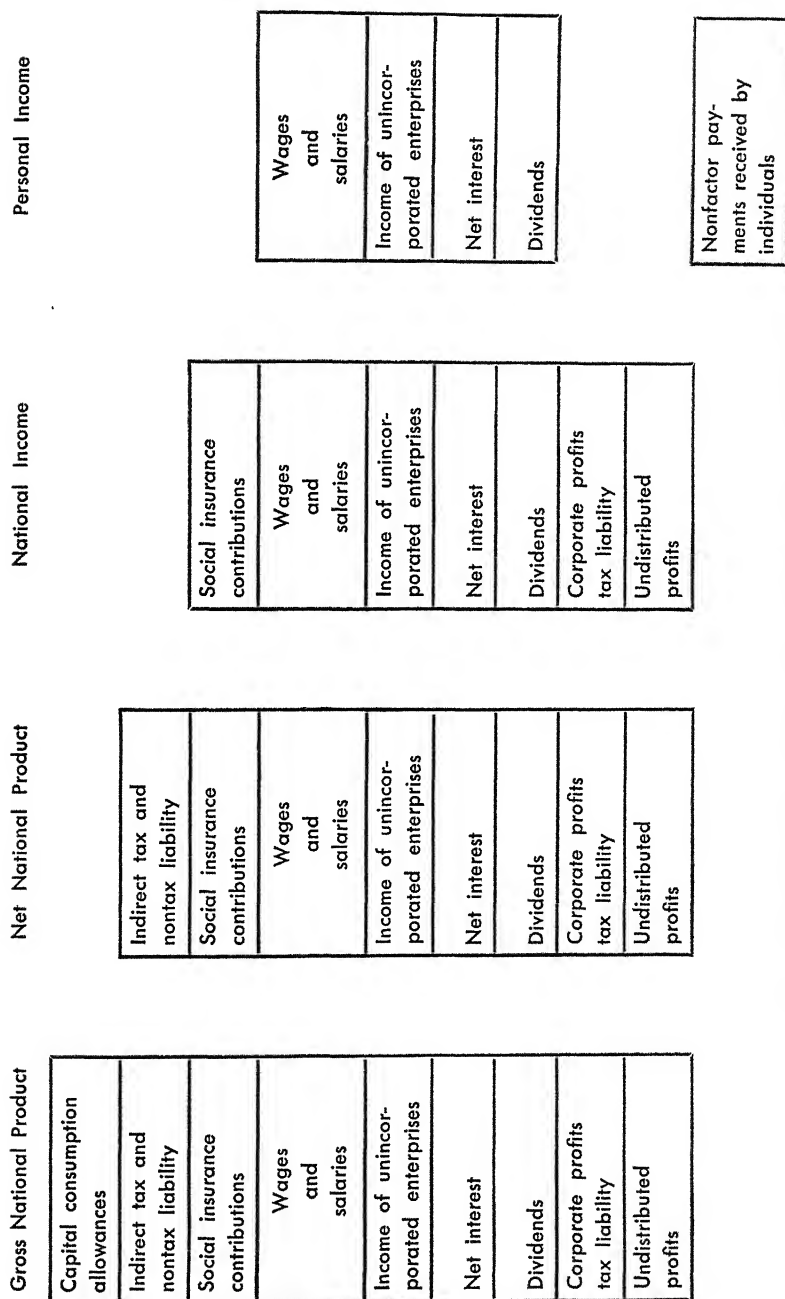


Fig. 1. The interrelation of the various national income measurements.

appeared on the allocation side of the national income and product account in Table 18. The total is equal to the gross national product. The second block shows net national product. It is the same as gross national product except that capital consumption allowances have been omitted. National income (the third block) represents a further adjustment, omitting indirect taxes and thus leaving only those elements which are factor payments. Finally, personal income shows those elements of national income which are received by individuals, with the addition of the other nonfactor payments that individuals receive.

### The Personal Income Account

Before leaving the subject of personal income, one more aspect of this measurement should be discussed. In the discussion of the firm the income statement was presented as giving both the sources and allocations of the income the firm received. A similar statement could be drawn up for an individual to show the sources of his income and how this income was allocated. A combined statement for all the individuals in the economy would on the sources side be exactly the same as the items shown in Fig. 1 for personal income. On the allocation side it would show personal taxes, consumer expenditures, and savings. Such a statement is given in Table 19.

*Table 19. Personal Income Account for All Individuals, 1947 \**

(In millions)

Allocations		Sources	
Personal tax and nontax payments	\$ 21,621	Wages and salaries.....	\$121,913
Durable consumer goods .....	20,963	Income of unincorporated enter- prises and rental income of per- sons.....	45,997
Nondurable consumer goods.....	96,487	Net interest.....	4,293
Consumer services.....	47,305	Dividends.....	6,880
Personal saving.....	8,822	Nonfactor payments to individ- uals .....	16,115
<hr/>		<hr/>	
Total personal outlay and sav- ing.....	\$195,198	Total personal income.....	\$195,198

\* Source: *Survey of Current Business*, July, 1948, Table 3, p. 16, Table 2, p. 16, Table 1, p. 16, and Table 4, p. 17, U.S. Department of Commerce.



It is useful to divide an individual's allocations of income into three categories: (1) tax and other payments to the government, (2) consumer expenditures, and (3) saving. That portion of income which does not fall into either of the first two categories is classified in the third category, saving. Thus if an individual purchases a house and uses a part of his current income to make this capital expenditure, it would appear in the above personal income account as personal saving, and it would signify that the individual had not consumed all the income that he was paid in this period. The purchase of a house is merely a change in the form of his assets from cash into property and does not affect his current accounts. The fact still remains that he has not consumed all the income he received during the period. The two sides of the personal income account will always balance, because personal savings is defined simply as total personal income minus personal taxes and consumer expenditures. Therefore if an individual were suddenly to receive \$1,000 of income, the moment he receives it his savings would simultaneously increase by the same amount in order to make the account balance. This additional saving can decrease only after the individual has an opportunity to spend the money, and consumer expenditures can therefore increase. Personal saving is the balancing item in the personal income account, in exactly the same way that profit is the balancing item in the income statement for a firm.

**DISPOSABLE INCOME.** The disposable income of individuals is frequently referred to in economic literature. By disposable income is meant the amount of money which individuals have at their disposal to save or spend. Not all personal income can be considered to be disposable income, since individuals have a legal obligation to pay taxes to the government. They cannot exert any choice over whether they spend or save this portion of their income. Disposable income, therefore, is that amount of personal income which remains after personal tax and nontax payments to the government. This is the amount over which individuals have command in deciding what to spend and what to save. From the data in Table 19, it can be seen that disposable income for the year 1947 was \$173,577 million. This figure was obtained by deducting personal tax and nontax payments from total personal income.

## SUMMARY

This chapter has attempted to show how various measurements of production and income can be developed from the national income and product account. Each of these concepts presents production or income from a different point of view, and none of them should be used without being examined to make sure that they are appropriate for the purpose at hand. Gross national product represents the market value of production that occurs within a given period. It includes the contribution of capital goods (past production) that were consumed in the process of production. It equals the total value of consolidated sales in the economy, plus or minus the change in inventories. For many uses it will be found that the gross national product is the most appropriate of all the measures. Net national product is an adjustment of the gross national product to exclude capital consumption allowances. It therefore represents more nearly the net gain in economic goods realized by production and for this reason is a more valid measure of production due to *current* activity. National income values net national product at its factor cost rather than its market value. To do this it excludes indirect tax and nontax liability from net national product; what remains are the payments to factors of production. The nation's income is thus considered to be the total factor income. Personal income excludes those elements of national income which are not received as income by individuals. These are social insurance contributions, corporate profits tax liability, and undistributed profits. At the same time personal income includes the elements of nonfactor income that individuals receive in addition to their factor income. Finally, disposable income deducts personal tax and nontax payments from personal income, leaving the amount that individuals have to dispose of by spending on consumer goods and services or by saving.

In addition to these specific measurements which are in current use, it should be remembered that many more measurements can be derived for different purposes. The value of national income statistics lies not so much in the fact that they yield aggregate measurements but rather in that they provide a framework into which the various elements in the economy can be fitted. The measurements discussed above are all highly dependent upon the components shown in the national income and product account, and it is this account itself which is to be stressed as the ultimate tool of analysis.

## APPENDIX TO CHAPTER 4. INCOME AND PRODUCT DERIVED FROM A SYSTEM OF SECTOR ACCOUNTS

### THE USE OF SECTOR ACCOUNTS IN THE ECONOMY

#### **Differences between Parts of the Economy**

In a modern economy a great many different activities are carried out by different types of organizations or units. Very often these organizations or units are different from each other because of their function or purpose, and for this reason it is useful to separate them into different categories.

Much of the discussion in the previous chapters has dealt with business firms. These form a large segment of the economy and are subject to a framework of technology, costs, and demand within which they operate. A great deal of economics has been concerned with the way in which this sector operates: how much will be produced under specific conditions, how goods will be priced, and exactly what changes will take place in the system. If such study is to progress in a reasonable manner, the accounts of this sector must be analyzed in detail; for this purpose these accounts should not be combined with the accounts of the other sectors.

A government unit or agency is very different from other units, in that it receives its funds on a very different basis and entirely different sets of criteria determine the manner in which it makes its allocations. Although political mechanisms are intended to tax and spend according to the desires of individuals, the decisions of individuals in the aggregate are made on a different basis from comparable decisions for individual business firms and households. Problems of both domestic and foreign policy depend on such things as ethical considerations and the future of the nation. The accounts of the government will yield a great deal of information about how this sector reacts to the forces that affect it.

A household is primarily concerned with the satisfaction of its needs and wants. The income that it receives is allocated in such a manner as to fulfill this purpose best, and in most instances this pattern of consumption will be dictated by existing institutions and culture as well as by the psychological desires of the individual. In like manner the income of the individual will depend on the value that the society places on his contribution and the relative willingness of the individual to make this contribution, combined with the other nonfactor income that the society sees fit to give the individual. The accounts for the household reflect these forces; if households

are treated as a separate group, the way such forces fit into the economy can be shown.

Finally, it should be noted that no modern national economy is a completely closed system. Some transactions are made with other national economies. One country purchases goods or materials from another country, or an individual from that country travels abroad. The basic elements that affect such intereconomy accounts must to a very large extent lie outside any specific economic system and be determined by situations and forces in other countries. So here again the sector composed of the rest of the world would need consideration different from other sectors in the economy.

It is evident that the subdivision of the economy into sectors could go very much further than is indicated above. For example, the business sector contains many dissimilar elements. The farmer operates quite differently from the manufacturer, and the retail shopkeeper is different from either of these. Types of industrial organization, technology, and markets are all quite different. Such things as public utilities present another still different type of enterprise, which is controlled by still different types of forces. The household sector, similarly, could be split up into urban and rural households, or it could be further classified by income groups. Obviously the different government agencies and units also could be divided up according to their function; this would mean differentiating between such things as local police departments on the one hand and the legislative parts of the Federal government on the other or between the activities of the Treasury Department and the Department of Agriculture.

Although the definition of sectors can usefully be made much narrower for many purposes and specific methods for doing so will be taken up in Chap. 6, this appendix will divide the economy only into the four sectors mentioned above. These are (1) the business sector, (2) the government sector, (3) the household sector, and (4) the rest of the world sector. It will be shown that by using a system of five accounts, a complete system of accounts revealing the relationships among the sectors is obtained.

### **Sector Accounts as a System of Accounts for the Economy**

The accounts for each of the sectors in the economy will together form a complete system of accounts for the economy. An account for a sector is a consolidation of the accounts of the various units within the sector; this means that all the transactions which occur between units within a sector are canceled out and only the intersector relationships remain. A sector is thus treated as a unit that deals with other sectors. The business sector is regarded as one large producing unit, which sells goods to the government sector, the household sector, and the rest of the world sector and also to

producers on capital account. The business sector simultaneously pays the government sector taxes, pays the household sector for its services or for the services of the factors that households own, and allocates the remaining amount of total receipts to gross business savings (capital consumption allowances and undistributed profits). Gross business savings thus serve as a balancing item between what the business sector receives and what it pays out to other sectors. In periods of depression it would be quite possible for business to pay out to the other sectors more than it receives for them, so that gross business savings would appear as a negative item on the allocation side of the business sector account. A similar analysis can be made for the government sector; its receipts come partly from each of the other sectors. If the funds it receives as tax and nontax payments are not sufficient to cover its current expenditures, the additional funds required will come either from increased borrowings or from past accumulations and will be shown as a current deficit on the receipts side of the account. The deficit is the balancing item between current receipts and current expenditures. When current receipts exceed current expenditures, this item will be negative and will be termed government surplus. The household sector will also deal with the other sectors and will have a balancing item that makes its total allocations equal to its income. On the sources side of the household account the payments received from the other sectors will be shown, and on the allocations side the payments made to these same sectors will be listed. The balancing item between receipts and payments will be personal saving. When receipts exceed personal taxes plus consumer expenditures, personal savings will obviously be positive; and when the receipts are less than personal taxes plus consumer expenditures, personal savings will be negative and will be called personal dissavings. The major importance of the rest of the world sector lies in how on balance it affects the various domestic sector accounts. For this reason it is sufficient for this sector to deal with net accounts that when added up will show only the net investment or disinvestment in the United States by the rest of the world. The total of the account will be the difference between the payments to the United States by the rest of the world and the payments to the rest of the world by the United States.

**THE GROSS SAVINGS AND INVESTMENT ACCOUNT.** It will be noted that the accounts for each sector not only show the transactions with the other sectors but also include as a necessary component a balancing item that equates the two sides of the account. Every item except the capital expenditures by business and the balancing items in each account will appear in the accounts of two different sectors. Wages paid by the business sector will appear again as income for the household sector. Consumer expenditures will appear as

an allocation of the household sector and again a source of funds for the business sector. Taxes paid by business appear as an allocation by the business sector and again as a source of funds by the government sector. It will be noted that in every one of these cases an item that is an allocation for one sector is a source for the other sector; thus every item except capital expenditures by business and the balancing items is entered twice in the system of sector accounts, once as a source and once as an allocation. In addition to the sector accounts, the construction of a gross savings and investment account makes it also possible to record twice the capital expenditures by business and all of the balancing items, so that the system is complete. Capital expenditures are credited to this account, and each of the balancing items is entered in the gross savings and investment account on the opposite side from that on which it appears in the sector account. After all such items have been entered, it will be found that the total on the debit side of the gross savings and investment account is exactly equal to the total on the credit side. The reason for this is quite obvious. The total for the debit side of all five accounts added together must be exactly equal to the total for the credit side of all these five accounts. Every item on the debit side has an exact counterpart on the credit side, so that the two totals for all accounts are totals of identical items. Furthermore, since the two sides of each sector account are equal to each other, through the use of their balancing items, it follows that the total debits for all sectors must equal the total credit for all sectors. Therefore, the remaining account, savings and investment, must have equal debits and credits if the total of all debits and credits is to be equal as was postulated above. This process can be verified by examining the accounts in the following section.

#### A SYSTEM OF SECTOR ACCOUNTS FOR THE UNITED STATES IN 1946

The National Income Division of the Department of Commerce now publishes national income statistics in the form of sector accounts.<sup>1</sup> In order to provide standard treatment of the classifications into sector accounts and the relation of these accounts to the national income and product account, the published form of these accounts will be used.

#### **The Business Sector**

The business sector contains all firms, institutions, and organizations that produce goods and services for sale at a market price intended to cover the costs of production. In addition to the usual private enterprise operating for

<sup>1</sup> See "National Income," supplement to *Survey of Current Business*, July, 1947, U.S. Department of Commerce.

profit (such as ordinary business firms, farmers, lawyers, doctors, etc.) the business sector also includes mutual institutions, government enterprises,<sup>2</sup> owner-occupied houses, cooperatives, and nonprofit institutions serving business. All these producing units are treated as one large unit, for which a production statement is made in the manner described in Chap. 3. Intrasector transactions on current account cancel out, and what remains is a consolidated business income and product account.

Table 20 contains for the business sector the same items that have previously been shown in the national income and product account for the economy as a whole, with the difference that here these items are shown in greater detail and in different tabular arrangement. Most of the increase in detail is self-explanatory. Wage disbursements need not exactly coincide with wage accruals. Other labor income includes several minor categories of payment, the nature of which is discussed in the appendix to Chap. 5. The inventory valuation adjustments are corrections that are applied to the reported amount of income of unincorporated enterprises and of undistributed profits of corporations to correct for the amount of inventory profit or loss customarily included in business accounts. This is done because only the value of the real change in inventories, not the change in the book value of inventories, is considered as a part of business gross product. Business transfer payments include such things as charitable contributions by the business sector and consumer bad debts that business bears.

From the point of view of the individual firm the balancing item on the production statement is undistributed profits. It is the difference between the total on the sources side of the individual firm's production statement and the total of all other allocations. For the business sector as a whole, however, a different kind of balancing item is necessary. When the estimates are made for each item on the debit and credit sides of the account, the final total for each side does not balance as it should. It is obvious that in attempting to calculate each of these elements independently there should be some over-all difference between the two sides of the account. This difference is termed the statistical discrepancy, since from a theoretical point of view it should not exist.

The consolidated business income and product account shows as its total on both sides the gross product originating in the business sector of the economy. Business net product and income originating in the business sector can be calculated from the account in a manner similar to that used in deriving net national product and national income from the national income and product account. Income originating in the business sector is equal to the payments of factor income made by that sector: the compensa-

<sup>2</sup> With respect to their purchases and sales on current account.

Table 20. Consolidated Business Income and Product Account, 1947 \*

(In millions)

Compensation of employees:		Consolidated net sales:	
Wages and salaries:		To consumers....	\$158,008
Disbursements .....	\$102,014	To government .....	11,339
Excess of accruals over dis-		To business on capital ac-	
bursements.....	0	count .....	29,413
Supplements:		To abroad.....	8,896
Employer contributions for		Change in inventories .....	618
social insurance ...	2,483		
Other labor income ..	1,629		
Income of unincorporated enter-			
prises and inventory valua-			
tion adjustment. ....	38,866		
Rental income of persons ..	7,131		
Corporate profits before tax and			
inventory valuation adjust-			
ment:			
Corporate profits before tax:			
Corporate profits tax liabil-			
ity.....	11,709		
Corporate profits after tax:			
Dividends. ....	6,643		
Undistributed profits. ..	10,793		
Inventory valuation adjust-			
ment.....	-5,075		
Net interest.....	3,154		
Income originating .....	179,347		
Indirect business tax and nontax			
liability.....	18,488		
Business transfer payments ..	612		
Statistical discrepancy.....	-3,389		
Minus: Subsidies minus current			
surplus of government enter-			
prises.....	-126		
Charges against net product. ..	195,184		
Capital consumption allowances	13,090		
Charges against business gross			
product.....	\$208,274	Business gross product.....	\$208,274

\* Source: *Survey of Current Business*, July, 1948, Table 2, p. 14, U.S. Department of Commerce.



tion of employees, the income of unincorporated enterprises, rental income of persons, corporate profits, and net interest. Net product includes in addition indirect business tax and nontax liability, and is adjusted for several of the minor items mentioned above. The addition of capital consumption allowances to business net product gives business gross product.

### The Government Sector

The government sector includes all the agencies of the Federal, state, and local governments except the *current* accounts of the government enterprises, which are included in the business sector. Purchases on *capital* account by government enterprises, however, are considered to be current expenditure of the government sector. Similarly, the net interest payments and the operating surplus or deficit of such enterprises will also be a part of the government sector.

*Table 21. Consolidated Government Receipts and Expenditures Account, 1947 \**

(In millions)

Purchases of goods and services:		Personal tax and nontax receipts	\$21,621
Purchases of direct services:		Corporate profits tax accruals...	11,709
Compensation of employees:		Indirect business tax and nontax	
Wages and salaries.....	\$15,571	accruals ... ..	18,488
Supplements:		Contributions for social insur-	
Employer contributions		ance:	
for social insurance.	1,020	Employee contributions...	2,068
Other labor income.....	172	Employer contributions:	
Income originating and net		Business.....	2,483
and gross product.....	16,763	Government.....	1,020
Net purchases from business..	11,339	Households and institutions	17
Net purchases from abroad....	-150	Deficit (+) or surplus (-) on	
Transfer payments.....	11,064	income and product transac-	
Net interest paid.....	4,439	tions .....	-14,077
Subsidies minus current surplus			
of government enterprises.....	-126		
Government expenditures.....	\$43,329	Government receipts and deficit.	\$43,329

\* Source: *Survey of Current Business*, July, 1948, Table 3, p. 14, U.S. Department of Commerce.

On the expenditure side of the government account it can be seen that income originating, net product, and gross product in the government sector are all the same and are equal to the compensation of the employees.

The computation of these measurements from the government receipts and expenditures account follows the same principles that were discussed in the appendix to Chap. 3. Since the government charges all of its expenditures to its current accounts, it cannot have depreciation. The other expenditures by the government consist of net purchases from business and abroad, transfer payments to individuals (such as relief, veterans' aid, bonuses, etc.), net interest paid, and subsidies minus current surplus of government enterprises. The receipts side of the account shows sources of funds and, in addition, the balancing item between receipts and expenditures. When this balancing item is positive, it represents a government deficit; when it is negative, there has been a surplus of receipts over expenditures.

### **The Household Sector**

The household sector contains primarily individuals in their capacity as consumers and income recipients. In addition, however, certain nonprofit institutions that serve individuals are considered to be a part of the household sector. These include privately endowed universities; private charity organizations such as hospitals, the Red Cross, etc.; and private trust, pension, and welfare funds. (See Table 22.)

The total on the receipts side of the personal income and expenditure account adds up to give the figure for personal income that was shown in Table 19, Chap. 4. The main difference between the account shown here and the previous one lies in the detail and form of the presentation. The receipt by the household sector of transfer payments from government and business has already been discussed in relation to the expenditures of these sectors. On the allocations side of the personal income and product account, income originating, net product, and gross product for the household sector can be calculated. The amount that is paid to employees of the household sector plus the amount of interest paid by households constitutes both the income originating and the net product of the household sector, since this sector pays no indirect taxes. Although ordinary households do not have depreciation, certain of the institutions classified in the household sector do charge depreciation, which must be added to net product in order to obtain gross product for the household sector. As noted before, personal saving is the balancing item of the account.

### **The Rest of the World Sector**

The rest of the world sector includes all foreign countries, United States territories and possessions, international organizations, and the United States monetary gold stock. This last item is included in the rest of the world sector because the acquisition of gold by the monetary authorities has the same

Table 22. *Personal Income and Expenditure Account, 1947 \**

(In millions)

Personal consumption expenditures:		Wage and salary receipts:	
Purchases of direct services:		Disbursements by:	
Compensation of employees:		Business.....	\$102,014
Wages and salaries paid..	\$ 4,568	Government.....	15,571
Supplements paid:		Households and institutions...	4,568
Employer contributions for social insurance.....	17	Rest of the world .....	6
Other labor income ...	21	Minus: Employee contributions to social insurance...	2,068
Interest paid.....	931	Other labor income:	
<i>Income originating in and net product of households and institutions...</i>	5,537	Business .....	1,629
Institutional depreciation ..	209	Government.....	172
<i>Gross product of households and institutions.....</i>	5,746	Households and institutions.	21
Net purchases from business	158,008	Income of unincorporated enterprises and inventory valuation adjustment.....	38,866
Net purchases from abroad..	1,001	Rental income of persons.....	7,131
Personal tax and nontax payments.....	21,621	Dividends.....	6,880
Personal saving .....	8,822	Personal interest income.....	8,732
		Government transfer payments	11,064
		Business transfer payments....	612
Personal outlay and saving....	\$195,198	Personal income.....	\$195,198

\* Source: *Survey of Current Business*, July, 1948, Table 5, p. 15, U.S. Department of Commerce.

effect as the procurement of foreign exchange by them and is shown in the balance of payments statistics as foreign investment. All transactions are shown on a *net* rather than a gross basis. (See Table 23.)

The net payments of factor income to the United States are shown separately from the net purchases from the United States, so income originating, net product, and gross product originating in the rest of the world can be calculated. The net purchases from the United States are shown by the sector from which they are purchased. The total amount on the credit side of the account is a balancing item.

### The Gross Savings and Investment Account

The gross savings and investment account contains business purchases on capital account together with the various balancing items that appear in

Table 23. *The Rest of the World Account, 1947 \**

(In millions)

Net payments of factor income to the United States:		Long-term capital movement ..	\$7,741
Wages and salaries.....	\$ 6	Short-term capital movement....	-2
Interest .....	208	Change in gold stock.....	2,163
Dividends.....	237	Errors and omissions.....	-1,004
Branch profits.....	402		
<i>Income originating and net and gross product.....</i>	<i>853</i>		
Net purchases from the United States:			
From business ...	8,896		
Purchases from United States business.....	15,798		
Sales to United States business.....	6,902		
From government .....	150		
Purchases from United States government .....	1,052		
Sales to United States government.....	902		
From persons .....	-1,001		
Purchases from United States persons.....	145		
Sales to United States persons	1,146		
Net current payments to the United States.....	\$8,898	Net disinvestment in the United States.....	\$8,898

\* Source: *Survey of Current Business*, July, 1948, Table 4, p. 15, and Table 11, p. 18, U.S. Department of Commerce.

the sector accounts. When such a balancing item appears as a debit in its respective sector account, it will appear as a credit in the gross savings and investment account; and likewise when it appears as a credit in its sector account, it will be a debit in the savings and investment account. This account presents no new data but is merely a transcription of items that have already appeared in the sector accounts. (See Table 24.)

### SUMMARY

The sector accounts together with the gross savings and investment account provide a complete system of accounts for the economy. These

Table 24. *Gross Savings and Investment Account, 1947 \**

(In millions)

Business purchases on capital account.....	\$29,413	Excess of wage accruals over disbursements.....	\$ 0
Change in business inventories	618	Undistributed corporate profits (domestic) .....	10,793
Net disinvestment in United States by rest of world . . .	8,898	Corporate inventory valuation adjustment.....	-5,075
Government surplus on income and product transactions.....	-14,077	Statistical discrepancy . . .	-3,389
		Capital consumption allowances by private business. . .	13,090
		Foreign branch profits (net)	402
		Institutional depreciation. . .	209
		Personal saving . . . . .	8,822
Gross investment and government deficit.....	\$24,852	Gross private saving.....	\$24,852

\* Source: *Survey of Current Business*, July, 1948, Table 6, p. 15, U.S. Department of Commerce.

accounts show the interrelationships among sectors and in this process provide data on income originating, net product, and gross product by sector. In this system the intrasector transactions have been canceled out. The intersector transactions are recorded twice in the system of accounts: once as a debit for the sector making the payment and once as a credit for the sector receiving the payment. Business transactions on capital account and the various balancing items also appear twice: once in the sector account to which they refer and again as a corresponding entry in the gross savings and investment account. Thus every item in the system of accounts appears once as a debit and once as a credit.

The operations of each sector and its relation to the other sectors are thus described by the data given in these accounts. By analyzing the patterns of the accounts in different periods, much more can be learned about the economy than is immediately apparent from the national income and product account alone. For example, it is possible to see what taxes are important as the sources of the government revenue, to what sectors the government is making payments, and whether the government has a surplus or deficit. The development of sector accounts is a first step toward the study of the mechanism by which the economy operates.

## 5. National Income Statistics

### for the United States 1929

### to 1947

National income statistics can be viewed not only as specific components or aggregates that are fitted into a framework of accounts for the economy applicable to any one year, but also as a separate series of statistics that will reveal the changes that have taken place in a particular aggregate or component over a period of years. Gross national product, for example, forms a series that shows considerable variation over the years; and as will be seen in later chapters, the pattern described by the gross national product series will be of utmost importance in the analysis of income and employment. In addition to the impressive sweep of the larger aggregates the component series of national income statistics can also trace the development of specific elements in the economy. Thus the change in the amount of inventories held or the amount of depreciation charged by producers can be seen at a glance. Such elements as these become important when attempts are made to check theoretical speculations empirically or when the analyst attempts to trace out the mass of empirical patterns in the hope of gaining insight into the operation of the economy.

## THE NATIONAL INCOME AND PRODUCT ACCOUNT, 1929 TO 1947

**National Income and Product Expenditures**

The data included in the national income and product account can be presented for a period of years in two tables, in such a way that the data on expenditures for gross national product will be shown as annual series of data in one table and the allocations of gross national product will be shown as annual series of data in another table. Table 25 shows the breakdown of the expenditures for gross national product. The items in this table are those which were shown on the source side of the national income and product account given in Table 7, Chap. 3. There are four main classifications of expenditures: (1) personal consumption expenditures, (2) gross private domestic investment (including inventory change), (3) net foreign investment, and (4) government expenditures on goods and services. These classifications can in turn be broken down into finer subdivisions; *e.g.*, personal consumption expenditures can be classed as (a) durable goods, (b) nondurable goods, and (c) services.

Over the period from 1929 to 1947 the gross national product varied considerably. In 1933 it had fallen to little more than half of what it had been in 1929, and by 1947 it had risen to more than double what it was in any prewar year. This means that there have been violent differences in the market value of goods produced by the economy in various years. Such differences cannot be ascribed only to the differences in the level of physical production, since, obviously, the market value of the same goods has been different in different years. During the depression prices were lower than they were in 1929, and after the war prices rose a great deal. Part Two will discuss the significance that can be attached to the changes in the level of gross national product and the way in which such changes in level take place. In order to understand Table 25 as a historical record of economic activities it will be more useful to examine the various component expenditures. The component expenditures will also reveal the impact of the depression and the war, although the actual patterns of variation for the different components may be quite different.

Personal consumption expenditures dropped by about \$30 billion from 1929 to 1933, but by 1947 they were almost \$120 billion above

Table 25. Gross National  
(In billions)

	1929	1930	1931	1932	1933	1934	1935
A. Gross national product . . . . .	103.8	90.9	75.9	58.3	55.8	64.9	72.2
1. Personal consumption expenditures . . . . .	78.8	70.8	61.2	49.2	46.3	51.9	56.2
a. Durable goods . . . . .	9.4	7.3	5.6	3.7	3.5	4.3	5.2
b. Nondurable goods . . . . .	37.7	34.1	29.0	22.7	22.3	26.7	29.4
c. Services . . . . .	31.7	29.5	26.6	22.8	20.6	20.9	21.7
2. Gross private domestic investment . . . . .	15.8	10.2	5.4	0.9	1.3	2.8	6.1
a. New construction . . . . .	7.8	5.6	3.6	1.7	1.1	1.4	1.9
b. Producers' durable equipment . . . . .	6.4	4.9	3.2	1.8	1.8	2.5	3.4
c. Change in business inventories . . . . .	1.6	-0.3	-1.4	-2.6	-1.6	-1.1	0.9
3. Net foreign investment . . . . .	0.8	0.7	0.2	0.2	0.2	0.4	-0.1
4. Government expenditures on goods and services . . . . .	8.5	9.2	9.2	8.1	8.0	9.8	9.9
a. Federal . . . . .	1.3	1.4	1.5	1.5	2.0	3.0	2.9
b. State and local . . . . .	7.2	7.8	7.7	6.6	5.9	6.8	7.0

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, Department of Commerce.

Note: Detail may not add to totals because of rounding.

the 1933 figure. The sharpest increases in consumers' expenditures came in the years 1946 and 1947. Within the category of personal consumption expenditures the components do not all follow the same patterns. Durable goods expenditures dropped sharply during the depression that followed 1929 because consumers' incomes were cut and luxuries such as automobiles and electrical appliances had to be curtailed. Not until 1941 was the consumer in a position to spend about the same amount on durable goods that he spent on them in 1929. After this year, although the consumer possessed income sufficient for such purchases, durable goods were not available because of the war production program. Only after the reconversion to peacetime production in 1946 and 1947 was the consumer able to satisfy some of his pent-up demand for durable goods. The history of expenditures on nondurable goods has a different setting. To a very large extent



*Product by Expenditures \***(of dollars)*

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
82.5	90.2	84.7	90.4	100.5	125.3	159.6	192.6	212.2	213.4	209.3	231.6
62.5	67.1	64.5	67.5	72.1	82.3	90.8	101.6	111.4	122.8	147.4	164.8
6.4	7.0	5.8	6.7	7.9	9.8	6.8	6.5	6.9	8.3	16.2	21.0
32.9	35.2	34.0	35.3	37.6	44.0	53.0	61.2	67.5	75.4	87.5	96.5
23.3	24.9	24.7	25.5	26.6	28.5	31.0	33.9	37.0	39.2	43.6	47.3
8.3	11.4	6.3	9.0	13.0	17.2	9.3	4.6	6.4	9.2	26.5	30.0
2.8	3.7	3.3	4.0	4.6	5.7	3.2	2.0	2.3	3.3	8.9	11.7
4.5	5.4	4.0	4.6	6.1	7.7	4.7	3.8	5.4	7.3	12.8	17.8
1.0	2.3	-1.0	0.4	2.3	3.9	1.4	-1.2	-1.4	-1.3	4.8	0.6
-0.1	0.1	1.1	0.9	1.5	1.1	-0.2	-2.2	-2.1	-1.4	4.7	8.9
11.7	11.6	12.8	13.1	13.9	24.7	59.7	88.6	96.5	82.8	30.8	28.0
4.8	4.6	5.3	5.2	6.2	16.9	52.0	81.2	89.0	74.8	20.8	15.6
6.9	7.0	7.5	7.9	7.8	7.8	7.6	7.4	7.5	8.0	10.0	12.3

Table 2, p. 19, and *Survey of Current Business*, July, 1948, Table 2, p. 16, U.S. Depart-

nondurable expenditures by consumers represent purchases of necessities such as food and clothing. Although expenditures on such things were cut during the depression, the total physical volume of goods purchased did not fall equivalently. Prices of agricultural goods declined sharply during the depression, and as a result the cost of food and clothing also dropped sharply. Conversely, the rise in nondurable goods expenditures immediately after the war reflects the fact that consumers were forced to pay higher prices for food and clothing when agricultural prices rose sharply.

Gross private domestic investment shows an even sharper decline from 1929 to 1932 than personal consumption expenditures. It dropped from over \$15 billion in 1929 to less than \$1 billion in 1932. As was true for durable consumer goods expenditures, gross private domestic investment got back to the 1929 level by about 1940 or 1941, but

owing to the war restrictions private investment was cut back until the postwar period, when it again rose very sharply to \$26 billion in 1946 and \$30 billion in 1947. Again, the patterns of the components within gross private domestic investment are quite different from one another.

The total government expenditures on goods and services do not reveal in any striking way the depression that followed 1929, but the war is revealed by a huge increase in expenditures. When the Federal, state, and local expenditures are examined separately, other facts become evident. Prior to the year 1932 Federal expenditures were about \$1.5 billion and state and local expenditures were about \$7.5 billion. After 1932 Federal expenditures rose gradually, until in 1940 they were about four times their previous amount, and after 1941 they rose rapidly to a peak of almost \$90 billion. Although state and local expenditures showed some fluctuation during this period, they did not reveal any very significant change. After the war Federal government expenditures declined to a level of \$15.6 billion in 1947 whereas state and local expenditures rose to \$12.3 billion.

### **National Income and Product Allocations**

The allocation side of the national income and product account is shown in Table 26. The form in which it is presented is slightly different from that given in Table 7, Chap. 3. All the minor adjustment items are shown explicitly, whereas in Chap. 3 they were lumped together as one adjusting item. The exact nature of each of the adjustment items is explained in the appendix to this chapter; the purpose of presenting them in detail here is to show how they fit into gross national product, net national product, and national income. Gross national product is shown as the total of twelve items, which are either allocations or adjustments. The difference between gross and net national product is capital consumption allowances. This leaves net national product as the total of items 2 through 12. The difference between net national product and national income is not only indirect tax and nontax liability (item 5) but also the minor adjustments items 2, 3 and 4, which are not considered to be payments to the factors of production. This leaves national income as the total of items 6 through 12; these are all either payments to the factors of production or else adjustments to factor payments (the inventory valuation adjustments

are adjustments to the factor payments of net income of unincorporated enterprises and corporate profits). The twelve items in this way give a breakdown of gross national product, net national product, and national income into their respective allocations and adjustment items.

In much the same way that Table 25 showed the expenditures for gross national product as series of data, so Table 26 presents the allocations and adjustment items of gross national product as such series. Here also the component items reveal very different patterns of movement. Capital consumption allowances do not show wide fluctuation even during the periods of deep depression or intensive war activity. To a very large extent this is a reflection of the way in which businessmen keep their accounts. Depreciation is charged on the basis of the expected life of capital equipment rather than on the basis of how much of such equipment is actually utilized. Therefore, the changes in productive activity do not necessarily affect depreciation charged. What affects depreciation most is the total stock of capital goods in the economy, and this changes slowly over a period of years. Another item that did not fluctuate widely during the depression was indirect tax and nontax liability. These taxes were at this time largely state and local taxes levied on property, supplemented increasingly by gasoline and sales tax levies. After 1933 the Federal excise taxes noticeably increased the amount of indirect taxes. This continued through the war period, when the Federal excise taxes on liquor, tobacco, and luxuries were sharply increased. Contrasted to these patterns are the widely fluctuating series of wages and salaries, net income of unincorporated enterprises, and corporate profits. Wages and salaries declined from \$50 billion in 1929 to \$30 billion in 1932, and by 1947 they had reached a peak of \$120 billion. In percentage terms the change in net income of unincorporated enterprises was even greater; it dropped from \$14 billion in 1929 to \$5 billion in 1932, but by 1947 it had risen to a total of \$39 billion. Finally, corporate profits show the most extreme fluctuations of all. Although they were \$10 billion in 1929, they were actually negative during both 1931 and 1932, showing that on the average business sustained a loss. During the war they rose to the unprecedented height of \$25 billion.

The components of the national income and product account can thus be shown as series of data over a period. The specific aggregates of gross national product, net national product, and national income

Table 26. Allocation of Gross National

*(In billions)*

	1929	1930	1931	1932	1933	1934	1935
A. Gross national product	103.8	90.9	75.9	58.3	55.8	64.9	72.2
1. Capital consumption allowances	8.8	8.7	8.3	7.7	7.2	7.2	7.4
a. Depreciation charges	7.6	7.7	7.5	7.0	6.6	6.5	6.6
b. Accidental damage to fixed capital	0.4	0.4	0.4	0.3	0.3	0.2	0.2
c. Capital outlays charged to current expense	0.9	0.7	0.5	0.4	0.4	0.5	0.6
B. Net national product	95.0	82.1	67.6	50.7	48.5	57.7	64.8
2. Adjustment for statistical discrepancy	-0.1	-0.7	1.2	1.4	1.2	0.9	-0.3
3. Adjustment for subsidies minus current surplus of government enterprises	0.1	0.1	†	†	†	-0.3	-0.4
4. Business transfer payments	0.6	0.5	0.6	0.7	0.7	0.6	0.6
5. Indirect tax and nontax liability	7.0	7.2	6.9	6.8	7.1	7.8	8.2
C. National income	87.4	75.0	58.9	41.7	39.6	48.6	56.8
6. Wages and salaries	50.0	45.7	38.7	30.1	28.7	33.4	36.3
7. Employer and employee contributions for social insurance	0.2	0.3	0.3	0.3	0.3	0.3	0.3
8. Other labor income	0.5	0.5	0.5	0.4	0.4	0.4	0.4
9. Income of unincorporated enterprises (adjusted for inventory valuation)	13.9	11.0	8.2	4.9	5.2	6.6	9.9
a. Stated income	13.8	10.2	7.6	4.6	5.7	6.7	9.9
b. Noncorporate inventory valuation adjustment	0.1	0.8	0.6	0.3	-0.5	-0.1	-0.1
10. Rental income of persons	5.8	4.8	3.6	2.5	2.0	2.1	2.3
11. Corporate profits (adjusted for inventory valuation)	10.3	6.6	1.6	-2.0	-2.0	1.1	3.0
a. Stated corporate profits before tax	9.8	3.3	-0.8	-3.0	0.2	1.7	3.2
1. Corporate profits tax	1.4	0.8	0.5	0.4	0.5	0.7	1.0
2. Dividends	5.8	5.5	4.1	2.6	2.1	2.6	2.9
3. Undistributed profits	2.6	-3.0	-5.4	-6.0	-2.4	-1.6	-0.6
b. Corporate inventory valuation adjustment	0.5	3.3	2.4	1.0	-2.1	-0.6	-0.2
12. Net interest	6.5	6.2	5.9	5.4	5.0	4.8	4.5

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, p. 16, and Table 4, p. 17, U.S. Department of Commerce.

Note: Detail may not add to totals because of rounding.

† Less than \$50 million.

*Product among Component Elements \***(of dollars)*

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
82.5	90.2	84.7	90.4	100.5	125.3	159.6	192.6	212.2	213.4	209.3	231.6
7.7	8.0	8.0	8.1	8.4	9.3	9.9	10.6	11.9	12.4	11.8	13.3
6.6	6.8	6.9	7.1	7.2	7.9	8.7	9.4	10.6	10.9	9.5	10.5
0.4	0.3	0.4	0.2	0.2	0.3	0.5	0.4	0.4	0.4	0.4	0.6
0.7	0.8	0.7	0.8	1.0	1.1	0.8	0.8	0.9	1.1	1.9	2.3
74.8	82.2	76.7	82.3	92.0	116.0	149.7	182.0	200.4	201.0	197.4	218.3
0.9	-1.1	-0.1	0.5	0.7	0.5	1.1	0.7	4.1	4.0	1.0	-3.4
†	-0.1	-0.2	-0.5	-0.4	-0.1	-0.2	-0.2	-0.7	-0.8	-0.9	0.1
0.6	0.6	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6
8.7	9.2	9.2	9.4	10.0	11.3	11.8	12.7	14.0	15.6	17.5	18.5
64.7	73.6	67.4	72.5	81.3	103.8	136.5	168.3	182.4	181.7	179.3	202.5
41.6	45.4	42.3	45.1	48.9	60.9	80.5	103.7	114.6	115.2	109.7	120.1
0.6	1.8	2.0	2.1	2.3	2.8	3.5	4.5	5.2	6.1	5.9	5.6
0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.9	1.3	1.5	1.6	1.8
9.9	12.2	10.8	11.3	12.7	16.5	22.7	26.0	27.4	29.1	35.1	38.9
10.1	12.3	10.5	11.4	12.7	17.1	23.1	26.1	27.4	29.1	36.4	40.0
-0.1	†	0.2	-0.2	-0.1	-0.6	-0.4	-0.1	-0.1	-0.1	-1.4	-1.2
2.7	3.1	3.3	3.5	3.6	4.3	5.4	6.2	6.7	7.0	6.7	7.1
4.9	6.2	4.3	5.8	9.2	14.6	19.8	23.7	24.0	19.8	16.8	24.7
5.7	6.2	3.3	6.5	9.3	17.2	21.1	24.5	24.3	20.4	21.8	29.8
1.4	1.5	1.0	1.5	2.9	7.8	11.7	14.2	13.5	11.6	9.0	11.7
4.6	4.7	3.2	3.8	4.0	4.5	4.3	4.5	4.7	4.7	5.6	6.9
-0.3	†	-0.9	1.2	2.4	4.9	5.1	5.9	6.1	4.0	7.2	11.2
-0.7	†	1.0	-0.7	-0.1	-2.6	-1.3	-0.8	-0.3	-0.6	-5.0	-5.1
4.5	4.4	4.3	4.2	4.1	4.1	3.9	3.4	3.1	3.0	3.4	4.3

Table 4, p. 20; Table 1, p. 19; and *Survey of Current Business*, July, 1948, Table 1,

also can be shown as series that are the result of combining the series of particular components. In other words, the data in Tables 25 and 26 not only show the history of specific components over a period of time but also show the changing composition of the aggregate measurements.

### THE PERSONAL INCOME ACCOUNT, 1929 TO 1947

#### **The Sources of Personal Income**

The personal income account can also be shown as series of data over a period of years. The two sides of this account can be presented in separate tables showing annual data for each of the components. The sources of personal income are shown in Table 27. These are quite similar to the sources shown in Table 19 of Chap. 4; furthermore, a number of these series will be found to be identical with those shown in Table 26. The items (1) wages and salaries,<sup>1</sup> (2) other labor income, (3) proprietors' and rental income, (4) dividends and (5a) net interest are all listed in Table 26. Personal income is shown as the total of all of these items plus (5b) net government interest and (6) transfer payments. The main value of Table 27 does not lie in the additional data presented but rather in the way in which the personal income series is shown to be the aggregate of the component series.

#### **Allocations of Personal Income**

The allocations of personal income are shown in Table 28. Personal consumption expenditures (item 2) has already been given in Table 25, but the breakdown of these expenditures is listed here in somewhat different form. The other items on this side of the personal income account do not appear on the national income and product account. The aggregate disposable personal income is shown to be personal income minus personal tax and nontax payments and represents the amount of income that the household sector has available to spend or save. Personal saving is that part of personal income

<sup>1</sup> For two years 1943 and 1944 wages and salaries shown in Table 26 were different from those payments shown in Table 27. The reason for this is that the data in Table 26 include wage and salary accruals whereas Table 27 represents only wage and salary payments.

which is neither paid out in personal tax and nontax payments nor spent on personal consumption expenditures. During the depression personal saving was negative, signifying that the household sector paid more out in personal tax and nontax payments and consumption expenditures than was received as income. During the war period the amount of personal savings rose to unprecedented heights.

#### NATIONAL INCOME BY INDUSTRIAL ORIGIN

The allocation side of the national income and product account given in Table 26 showed national income as the total of factor payments that are made in the economy. It is also useful to show national income in terms of the factor income that originates in the various industries. This has been done in Table 29. For this purpose the economy has been divided into eleven industrial groups. The data in this table show the source of factor payments in the nation and, therefore, the amount of the factors used by the various industrial groups. For this reason it may be looked upon as a type of resource allocation pattern, although for many purposes it would not be too satisfactory, since it does not show the interrelation of these industrial groups with each other. The forces behind the changes in particular industrial groups may be quite varied. The fall in the factor payments made by agriculture, forestry, and fisheries during the depression was due in large part to the fall in agricultural prices rather than to a change in agricultural output. On the other hand the fall in factor payments made by manufacturing during this same period was to a much larger extent due to the decline in output of manufacturing plants. The very large growth of factor payments by government during the war was largely the result of the payments to and support of the armed forces.

The tables given in this chapter are only a few of the large number of such tables that could be presented on various aspects of national income statistics. For example, much in the same way that Table 29 gives national income by industrial origin, so other tables showing wages and salaries by industry, income of unincorporated enterprises by industry, etc., could be given. Furthermore, each component from the point of view of its elements is an aggregate, and a finer breakdown of each component could be made to show exactly how it is

Table 27. Sources

(In billions)

	1929	1930	1931	1932	1933	1934	1935
A. Personal income . . . . .	85.1	76.2	64.8	49.3	46.6	53.2	59.9
1. Wages and salaries . . . . .	50.0	45.7	38.7	30.1	28.7	33.4	36.3
2. Other labor income . . . . .	0.5	0.5	0.5	0.4	0.4	0.4	0.4
3. Proprietors' and rental income . . . . .	19.7	15.7	11.8	7.4	7.2	8.7	12.1
4. Dividends . . . . .	5.8	5.5	4.1	2.6	2.1	2.6	2.9
5. Personal interest income . . . . .	7.5	7.1	7.0	6.6	6.2	6.0	5.7
a. Net interest . . . . .	6.5	6.2	5.9	5.4	5.0	4.8	4.5
b. Net government interest . . . . .	1.0	1.0	1.1	1.1	1.2	1.2	1.1
6. Transfer payments . . . . .	1.5	1.5	2.7	2.2	2.1	2.2	2.4

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, Table 3, p. 16; Table 4, p. 17; and Table 1, p. 16, U.S. Department of Commerce.

Note: Detail may not add to totals because of rounding.

Table 28. Allocation

(In billions)

	1929	1930	1931	1932	1933	1934	1935
A. Personal income . . . . .	85.1	76.2	64.8	49.3	46.6	53.2	59.9
1. Personal tax and nontax payments . . . . .	2.6	2.5	1.9	1.5	1.5	1.6	1.9
a. Federal . . . . .	1.3	1.1	0.6	0.3	0.5	0.6	0.8
b. State and local . . . . .	1.4	1.4	1.3	1.1	1.0	1.0	1.1
B. Disposable personal income . . . . .	82.5	73.7	63.0	47.8	45.2	51.6	58.0
2. Personal consumption expenditures . . . . .	78.8	70.8	61.2	49.2	46.3	51.9	56.2
a. Food and tobacco . . . . .	21.4	19.5	16.3	12.7	12.8	15.6	17.7
b. Clothing, accessories, jewelry . . . . .	11.0	9.6	8.1	6.0	5.4	6.5	6.9
c. Personal care . . . . .	1.1	1.0	1.0	0.8	0.7	0.8	0.8
d. Housing . . . . .	11.4	11.0	10.2	9.0	7.8	7.5	7.6
e. Household operation . . . . .	10.5	9.4	8.3	6.7	6.4	7.1	7.6
f. Medical care . . . . .	3.6	3.4	3.1	2.6	2.4	2.6	2.8
g. Personal business . . . . .	5.2	4.1	3.6	3.1	3.1	3.1	3.3
h. Transportation . . . . .	7.5	6.1	4.9	3.9	3.9	4.5	5.2
i. Recreation . . . . .	4.3	4.0	3.3	2.4	2.2	2.4	2.6
j. Private education and research . . . . .	0.7	0.7	0.7	0.6	0.5	0.5	0.5
k. Religious and welfare activities . . . . .	1.2	1.2	1.1	1.0	0.9	0.9	0.9
l. Foreign travel and remittances (net) . . . . .	0.8	0.8	0.6	0.5	0.4	0.3	0.4
C. Personal saving . . . . .	3.7	2.9	1.8	-1.4	-1.2	-0.2	1.8

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, p. 16, and Table 30, pp. 24-25, U.S. Department of Commerce.

Note: Detail may not add to totals because of rounding.



*of Personal Income \***of dollars)*

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
68.4	74.0	68.3	72.6	78.3	95.3	122.2	149.4	164.5	170.3	178.1	195.2
41.6	45.4	42.3	45.1	48.9	60.9	80.5	103.5	114.8	115.2	109.8	120.1
0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.9	1.3	1.5	1.6	1.8
12.6	15.4	14.0	14.7	16.3	20.8	28.1	32.1	34.1	36.0	41.8	46.0
4.6	4.7	3.2	3.8	4.0	4.5	4.3	4.5	4.7	4.7	5.6	6.9
5.6	5.6	5.5	5.4	5.4	5.4	5.4	5.5	5.9	6.7	7.9	8.7
4.5	4.4	4.3	4.2	4.1	4.1	3.9	3.4	3.1	3.0	3.4	4.3
1.1	1.2	1.2	1.2	1.3	1.3	1.5	2.1	2.8	3.7	4.5	4.4
3.5	2.4	2.8	3.0	3.1	3.1	3.2	3.0	3.6	6.2	11.4	11.7

Table 3, p. 19; Table 4, p. 20; Table 1, p. 19; *Survey of Current Business*, July, 1948,*of Personal Income \***of dollars)*

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
68.4	74.0	68.3	72.6	78.3	95.3	122.2	149.4	164.5	170.3	178.1	195.2
2.3	2.9	2.9	2.4	2.6	3.3	6.0	17.8	18.9	20.9	18.9	21.6
1.1	1.7	1.6	1.2	1.4	2.0	4.7	16.5	17.5	19.4	17.2	19.7
1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.7	2.0
66.1	71.1	65.5	70.2	75.7	92.0	116.2	131.6	145.6	149.4	159.2	173.6
62.5	67.1	64.5	67.5	72.1	82.3	90.8	101.6	111.4	122.8	147.4	164.8
20.0	21.6	20.7	21.1	22.6	26.5	32.8	38.1	41.8	46.3	55.0	61.8
7.6	8.0	7.9	8.3	8.8	10.5	13.2	16.3	18.0	20.1	22.1	22.6
0.9	1.0	1.0	1.0	1.1	1.2	1.4	1.7	1.9	2.1	2.4	2.3
7.9	8.4	8.7	8.9	9.2	9.9	10.6	11.1	11.7	12.2	13.2	14.4
8.7	9.3	8.7	9.5	10.3	11.7	12.2	12.6	13.5	14.8	18.6	22.0
3.0	3.2	3.2	3.4	3.6	4.0	4.5	5.0	5.6	5.9	6.7	7.4
3.6	3.9	3.6	3.7	3.8	4.1	4.1	4.2	4.5	4.9	5.5	6.0
6.0	6.4	5.5	6.3	7.0	8.2	5.2	5.2	5.6	6.4	11.8	15.5
3.0	3.4	3.2	3.4	3.7	4.2	4.6	4.7	5.3	6.0	8.6	9.4
0.5	0.6	0.6	0.6	0.6	0.7	0.8	1.0	0.9	0.9	1.0	1.1
0.9	0.9	0.9	0.9	1.0	1.0	1.2	1.3	1.6	1.6	1.6	1.6
0.4	0.5	0.4	0.3	0.2	0.3	0.3	0.6	1.0	1.6	0.8	0.7
3.6	3.9	1.0	2.7	3.7	9.8	25.4	30.0	34.2	26.6	11.8	8.8

Table 3, p. 19, and Table 30, p. 41; and *Survey of Current Business*, July, 1948, Table 3,

Table 29. National Income

(In billions)

	1929	1930	1931	1932	1933	1934	1935
1. Agriculture, forestry, and fisheries.....	8.0	6.0	4.6	3.1	3.5	3.6	6.2
2. Mining.....	2.1	1.7	1.0	0.7	0.7	1.2	1.2
3. Contract construction . . .	3.7	3.1	2.1	1.0	0.7	1.0	1.3
4. Manufacturing . . . . .	22.0	18.3	12.4	7.2	7.6	10.9	13.3
5. Wholesale and retail trade . . . .	13.1	12.0	9.6	6.3	5.4	7.9	9.0
6. Finance, insurance, and real estate.....	13.1	10.7	8.5	6.5	5.7	5.9	6.3
7. Transportation.....	6.6	5.5	4.3	3.1	3.0	3.3	3.6
8. Communications and public utilities.....	2.9	2.8	2.6	2.3	2.0	2.2	2.3
9. Service.....	10.2	9.0	7.7	6.0	5.4	6.1	6.5
10. Government and government enterprises... . . . .	5.1	5.3	5.4	5.2	5.3	6.3	6.7
11. Rest of the world . . . . .	0.6	0.6	0.5	0.4	0.3	0.2	0.3
Total, all industries . . . . .	87.4	75.0	58.9	41.7	39.6	48.6	56.8

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, Department of Commerce.

Note: Detail may not add to totals because of rounding.

made up over a period of time. Published tables on personal consumption expenditures by type of product thus list over 175 categories of expenditures for each year. National income statistics provide an interrelated body of data that, because they sum up the activity of the economy for each year, can show a great deal about the nature of the changes taking place over a period of years.

*by Industrial Origin \***(of dollars)*

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
5.3	7.2	6.0	6.1	6.6	8.9	12.9	14.5	14.8	15.3	18.0	19.3
1.6	1.9	1.5	1.6	1.9	2.3	2.6	2.7	2.9	2.8	3.0	4.0
1.9	2.0	1.9	2.3	2.6	4.4	7.0	5.6	4.1	4.2	6.5	8.7
16.2	19.3	15.0	17.9	22.4	32.9	45.1	57.6	60.1	51.9	48.1	61.7
10.3	11.9	11.7	12.1	13.7	15.9	18.2	21.4	23.8	26.6	33.2	37.5
7.2	7.9	8.0	8.2	8.5	9.5	11.0	12.2	13.3	14.0	15.0	16.5
4.2	4.5	4.0	4.5	4.9	6.2	8.5	10.6	11.2	10.5	10.3	11.4
2.5	2.7	2.7	2.9	3.0	3.3	3.7	3.9	4.1	4.3	4.9	5.4
7.3	8.0	7.7	8.1	8.6	9.7	11.0	12.2	13.6	14.6	17.2	18.8
8.1	7.8	8.5	8.6	8.8	10.5	16.4	27.3	34.3	37.4	22.7	18.7
0.2	0.1	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.4
64.7	73.6	67.4	72.5	81.3	103.8	136.5	168.3	182.4	181.7	179.3	202.5

Table 15, p. 26; and *Survey of Current Business*, July, 1948, Table 13, p. 19, U.S. De-

## APPENDIX TO CHAPTER 5. SOURCES AND METHODS OF COMPUTATION OF NATIONAL INCOME AND PRODUCT STATISTICS

The task of the National Income Division of the Department of Commerce in estimating gross national product and personal income and the series related to them is one of enormous complexity and detail. In this appendix no attempt can be made to cover the sources and methods of computation with any amount of thoroughness. Adequate treatment would require a large volume devoted only to this subject, and such a volume is in preparation by the Department of Commerce. The purpose of this chapter is only to give in a relatively small space an idea of the type of problems that are met and the general nature of the sources that are used.

Before any attempt can be made to estimate gross national product, the general approach that will be used must be decided upon. This is determined to a very large extent by the nature of the data that can be obtained. Although data are available on value added in manufacture, these data are not used directly in calculating gross national product. The physical production data given by the Bureau of the Census does, however, provide a basis for making a commodity analysis. In addition gross national product can also be estimated on the allocation side by using such data as wages and salaries as reported by the Federal Security Agency and corporate profits as reported by the Bureau of Internal Revenue.

Even after a general approach has been decided upon, the Department of Commerce is forced to use ingenious and sometimes roundabout methods of estimating the various components in order to avoid the large gaps that exist in the statistical material. Some of the sources are very much more reliable than others. Furthermore, the empirical series that are obtained usually require adjustment to make them correspond to the conceptual components of gross national product and personal income. The reported series exclude many essential elements and include other elements that are not desired; they must therefore be tailored to fit. Very few of the adjustments can be taken up here. It should be remembered, therefore, that the problems of estimation are very much more complex than may appear from the general outline of methods.

## GROSS NATIONAL PRODUCT BY EXPENDITURES

By far the greater part of the expenditures for gross national product are made on commodities, as opposed to services. The flow of these commodities through the economic system from producers to wholesalers to retailers to final purchasers can be traced,<sup>1</sup> and by this means the total expenditures for that part of the gross national product which is composed of commodities can be estimated. The remaining expenditures for gross national product can then be estimated separately. In this section the theory of the commodity flow analysis will be discussed and the general sources from which the estimates are obtained will be outlined. The sources for the remaining components of gross national product expenditure will then be taken up separately.

**The Theory of Commodity Flow <sup>2</sup>**

The commodity flow analysis is essentially a process of tracing the flow of commodities through the economic system, adding at each step the additional costs and expenses involved, so that finally an estimate is obtained of sales to consumers and to business on capital account or, in other words, of the commodity expenditures by these sectors on gross national product.

The first step in this analysis involves the classification of several thousand categories of commodities as finished durable consumption goods, finished semidurable consumption goods, finished perishable consumption goods, finished durable producers' goods, and unfinished commodities destined to enter further into the productive process. Classification of a commodity as finished does not depend solely upon the degree of processing; it is also based on the use to which a commodity is put. Flour, for example, is classified as finished if consumed in households, institutions, or government agencies, but it is classified as unfinished if consumed by a factory making bread or other products using flour as a raw material. The commodities classified as unfinished are dropped from the analysis. By considering only finished goods, all raw materials purchased by producers from other enterprises are automatically excluded, and this element of double counting eliminated. This is essentially the same as obtaining the value added by the producing sector of the economy as a whole. After the classifications

<sup>1</sup> The commodity flow going to government is not estimated by the "commodity flow method." For the actual procedure see p. 112.

<sup>2</sup> A large part of the following discussion is taken directly from material on the commodity flow that appeared in "The Gross Flow of Commodities and New Construction," by William H. Shaw, *Survey of Current Business*, April, 1942.

are made, estimates are obtained for the output of each class of finished commodities.

At this point, the commodity estimates are valued in the producers' prices, f.o.b. factory, farm, or mine. To pass from output at producers' prices to the final cost to ultimate users, all commodities except those produced and consumed on farms have to be followed through the distributive system. The first step in this process involves adjustment for changes in producers' inventories. Sales are equal to production plus inventory increases or minus inventory decreases. If both production and the change in inventories are known, the production data for all commodities can be adjusted by the inventory change so that the amount of commodities sold by the producer can be estimated.

The next step in tracing the commodity flow involves adding transportation charges to the f.o.b. sales estimates in order to obtain the delivered value of sales. After this, it is necessary to estimate how much of the producers' sales were to wholesalers, how much to retailers, and how much direct to consumers. This must be known before the commodities can be followed further through the channels of distribution. The goods that are sold to wholesalers must be adjusted for changes in wholesalers' inventories in order to give an estimate of the cost of goods sold by wholesalers. The sales of wholesalers are partly to retailers and partly to consumers, and the proportion of each of these must next be determined. Wholesalers' markups on sales to each of these groups are then estimated on the basis of operating expenses of wholesalers to obtain the total value of wholesale sales. At the retail level similar adjustments are made. Goods purchased by retailers are adjusted for inventory changes to obtain the cost of goods sold by retailers, and a markup based on operating expenses is added to obtain the retail value of goods sold.

Thus when the direct sales made by producers and wholesalers to ultimate users and the total value of goods sold by retailers are added, the total market value of commodities sold can be obtained. As was pointed out above, this accounts for a large part of the total value of goods and services in the economy. This somewhat roundabout method of tracing the commodity flow in the economy was chosen because of the availability of very detailed data at the production level and the relative scarcity of detail at the wholesale and retail levels. The general sources of these data will be outlined in the following section.

### **The Commodity Flow: Sources of Data**

The basic source for data on manufactured commodities is the *Biennial Census of Manufactures*, published by the Bureau of the Census for the odd

years up to 1939. The *Biennial Census* gives detailed output data for specific commodities, and the National Income Division of the Department of Commerce has classified these commodities into several thousand commodity groups. For Census years, output totals at the producing level can be obtained directly by adding up the figures for the commodities classed as finished. For intercensal years, the estimates are based on as many different interpolating series for each minor commodity group as are available. These series were checked against the Census totals for Census years, and reasonably good intercensal interpolations have been obtained for every commodity group.

Nonmanufactured commodities relevant to the study are found in the products of farms, fisheries, and mines. Of all these products only nonmanufactured foods and fuels can be classified as finished. Data on nonmanufactured foods are obtained from the annual statistics of the Department of Agriculture and from compilation made by the Bureau of Fisheries. Special tabulations of the Department of Agriculture and data in the *Census of Manufactures* give information on the amount of materials consumed in manufacturing. Data on nonmanufactured finished fuels were obtained from the Bureau of Mines for coal and from the Department of Agriculture for firewood.

The change in manufacturing inventories for the years 1937, 1938, and 1939 was obtained chiefly from detailed inventory data reported in the *Census of Manufactures*. The relation between sales and production was computed for these years, and the value of the change in inventories derived from this relation. The analysis was extended to earlier years by computing similar relationships for related corporate industry groups as reported in *Statistics of Income*, which is published annually by the Bureau of Internal Revenue. Since the original values obtained for nonmanufactured foods were in terms of sales, no inventory adjustment had to be applied to this group.

Freight revenues of Class I steam railways as percentages of commodity values at point of origin were compiled for 1928, 1930, 1933, 1936, and 1939 by the Interstate Commerce Commission. Similar percentages were obtained for the intervening years by using the annual freight commodity statistics of the commission supplemented by price data from various sources, principally the Bureau of Labor Statistics. For those groups which used other forms of transportation such as trucking or pipe lines, the data were checked and where necessary supplemented by whatever sales figures could be obtained on these forms of transportation.

The distribution of sales by type of purchaser was required at both the producing and the wholesale levels. The basic source used in distributing

the sales of producers among wholesalers, retailers, and consumers was the Census data for 1929, 1935, and 1939, reported in the Census Bureau publication *Distribution of Sales of Manufacturing Plants*. For the intercensal years, the derived Census year percentages, which did not change appreciably, were interpolated along a straight line.

The sales of wholesalers were distributed between retailers and consumers on the basis of data in the 1935 and 1939 *Wholesale Census*. Between 1935 and 1939 the percentages were interpolated along a straight line. Prior to 1935 the 1935 percentages were used. The goods purchased and sold by wholesalers were also corrected for the imports and exports made by wholesalers. The source for this correction was the annual data in *Foreign Commerce and Navigation*, published by the Department of Commerce.

The inventory changes for wholesale and retail trade were obtained for the years 1929, 1933, 1935, and 1939 from the *Wholesale Census* and the *Retail Census* data of these years. For other years they were interpolated from *Statistics of Income* data in much the same way that the inventory data were obtained for manufacturers.

The markup estimates for both wholesalers and retailers were based on a large variety of sources. Operating expenses as a percentage of net sales for comparable kinds of business were derived for 1929, 1933, 1935, and 1939 from the *Wholesale Census* and the *Retail Census* of these years. Expense ratios derived from noncensus data were used to interpolate for intercensal years whenever possible. Profit and loss allowances required to translate the operating expense ratios into the desired markup estimates were derived from noncensus data. These were checked and substantiated by relevant data in *Statistics of Income* for 1929 to 1939. Special studies such as *Distribution Costs*, by the Harvard Business School, were used in some instances.

The commodity flow analysis does not cover all the elements on the expenditure side of gross national product, nor does it cover much of the period since 1939. The methods used for other elements of expenditure and for all elements of expenditure in the present period will be taken up by individual category.

### **Personal Consumption Expenditures**

Since 1939 consumer retail expenditures as a whole have been estimated from sales tax data that are available for twenty-three states. For eleven of these states reports are received that classify sales by type of store, and this has enabled a relation to be established between the type of goods sold and the commodity classifications that were developed for the period prior



to 1940. On this basis the 1939 series has been extrapolated forward. Supplemental information of the types indicated below has also helped to establish these series.

**DURABLE CONSUMER GOODS.** This classification consists of such things as automobiles, radios, furniture, floor coverings, refrigerators, electrical appliances, durable housefurnishings, books, and fountain pens. For a number of these items well-defined statistics already exist. For example, the Automobile Manufacturers Association compiles reports on retail sales of automobiles. The reports of other trade associations often provide a basis for extrapolating additional items in the 1939 classification of commodities.

**NONDURABLE CONSUMER GOODS.** The major elements in this classification are food and clothing. The purchases of food are fairly well represented in the sales tax reports on the sales of retail food stores. Information on some items of clothing and accessories can be obtained on a sample basis from the reports of the National Retail Dry Goods Association and from the sales of department stores as reported by the Board of Governors of the Federal Reserve System.

**SERVICES TO CONSUMERS.** This classification does not represent commodities. It covers a variety of services upon which consumers make expenditures. Some of these are laundry and dry-cleaning services, barbershop and beauty-parlor services, shoe shines, rent of homes, hotels, telephone, telegraph, postage, medical services, legal services, domestic servants, automobile repair, local and intercity transportation, household utilities, amusements and recreation, insurance and banking services, educational services, and expenditures of religious organizations. This is by no means a systematic or exhaustive listing, but it will serve to demonstrate the wide variety of services that do exist in the economy. The building up of such series basically depends on Census material. The Censuses of Business, Retail Trade, Hotels, Places of Amusements, Occupations, and even Population have yielded information bearing on these series for various periods between 1929 and 1940. In addition there is some other material that is not of Census origin. Information on electricity consumed by households was based on the statistics of the Edison Electric Institute. The *Insurance Yearbook* provides information on insurance services to individuals. For each series there are special sources that supplement and help to extrapolate the Census material.<sup>3</sup>

### **Gross Private Domestic Investment**

This category consists of three classifications of business purchases: new construction, producers' durable goods, and the change in business inven-

<sup>3</sup> The methods and sources for estimating services are given by Edward F. Denison in *Survey of Current Business*, U.S. Department of Commerce.

tories. The change in business inventories is considered an item of gross investment, since it represents either an increase or decrease in the amount that business has invested in stocks on hand.

**PRIVATE NEW CONSTRUCTION.**<sup>4</sup> This classification includes private construction of the following types: residential, commercial, industrial and institutional, farm, and public utility. Residential construction estimates are based on building permit valuations with adjustment for undercoverage, undervaluation, abandonment, areas not reporting, and (since 1945) delays in starting construction. Value in place is derived from data on construction started by the application of construction timing patterns. Each of the series in the nonresidential building construction classification is derived from the F. W. Dodge Corporation contract award data for thirty-seven states. Adjustments are made for undercoverage and for buildings included in public utility construction. Farm construction is based on estimates by the Department of Agriculture. Public utility construction includes railroads, street railways, electric light and power plants, gas plants, telephone plant and equipment, and capital expenditure on pipe lines. The estimates for these items are derived from reports of various Federal and private agencies. The expenditures of municipally owned public utilities are considered part of public construction rather than private construction.

**PRODUCERS' DURABLE EQUIPMENT.** For the years prior to 1940 this category was estimated by means of the commodity flow described above. Sales to the government were eliminated on the basis of the Temporary National Economic Committee report *Government Purchasing*, 1935, No. 19. The relation of durable goods purchases by the government to various types of government expenditures was studied, and on this basis the amount of producers' durable goods purchased by the government was extrapolated for the years through 1939. For 1940 and 1941 relevant data in *Statistics of Income* were used. From 1942 through 1945 War Production Board data from Form 732 were used. Items of predominantly military nature, such as certain types of electronic equipment, were assumed to be government purchases. Priority listings of items were also of some help. The 1945 study by the Smaller War Plants Corporation served as a guide to estimate the undercoverage of the WPB material.

All this process of estimation was still carried on within the framework of the commodity flow method. The 1939 series were extrapolated, and the same markup technique was used. From 1946 on use has been made of a sample obtained by the Department of Commerce directly from manufacturers showing their shipments. For certain series, such as trucks and boats,

<sup>4</sup>This has been taken from *Survey of Current Business*, July, 1947, p. 23, U.S. Department of Commerce.

almost complete coverage is obtained. Since 1945 data have been available from the Securities and Exchange Commission on the expenditures for plant and equipment by user sector of the economy. These data do not include agriculture, however, and do not show the durable equipment that is purchased by producers on current account. The present series reconcile quite closely with these SEC data after allowances are made for these items.

### **Change in Business Inventories**

The change in business inventories is estimated in three segments: farm inventories, corporate inventories, and inventories of unincorporated non-farm enterprises. For farm inventories physical quantity estimates are prepared by the Department of Agriculture. From these the physical change in inventories that has occurred over the year is computed, and this, in turn, is multiplied by the prices prevailing at the end of the year. In this way the value of the change in farm inventories is obtained.

The book value of corporate inventories is reported in *Statistics of Income*. Unlike the data for farms this is not a measure of physical quantity and so must be treated differently. The overwhelming majority of firms value inventories at cost or market, whichever is lower, and as a result the change in the book value of inventories reflects not only the change in the physical quantity of inventories but also the change in the prices at which inventories have been valued. For purposes of determining gross national product these two elements must be separated. In order to obtain the physical change in inventories expressed in terms of market value from the book value of inventories two price series were developed: one showing the cost price of inventories at probable time of purchase and the other showing the market price of commodities included in the inventories. The lower of these two series was assumed to represent the prices in which inventories were valued. With this knowledge it was possible to eliminate the effect of price change on the book value of inventories and discover what the amount of physical change in inventories was. The final step was to express this physical change in inventories in terms of market prices.

Noncorporate inventories were more difficult to estimate. Data available for Census years were used to obtain the level of noncorporate inventories relative to corporate inventories. For intercensal years it was assumed that the general change in noncorporate inventories was similar in percentage movement to that for comparable corporate enterprises.

### **Net Foreign Investment**

Net foreign investment shows the change that has taken place in the assets (including the monetary gold stock) and liabilities of the rest of the

world account. The assets and liabilities in the rest of the world account change because of imports and exports of goods and services, payment of factor incomes to nonresidents and receipts by residents of factor incomes from abroad, and the net balance of cash gifts and contributions sent abroad. The data on all these transactions are obtained from the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

### Government Expenditures

Government expenditures are not reported in a form that is immediately convenient for showing the purchases of goods and services by government. (1) The accounts of Federal, state, and local governments are not consolidated, so that each must be separately treated. (2) The expenditures by the government do not reflect expenditures on goods and services alone.

FEDERAL EXPENDITURES ON GOODS AND SERVICES. The basic source for expenditures by the Federal government is the *Daily Treasury Statement*. This shows expenditures classified by agency. (1) The first step is to deduct those expenditures which are not expenditures for goods and services. These deductions include such things as loans, tax refunds, grants to states, transfer payments, and interest payments. (2) Adjustments are made for the amount of advance payments and purchases on credit by the government. (3) The remaining total is adjusted for sales of surplus commodities that are made by such organizations as the War Assets Administration. The resulting total represents the *net* expenditures that the Federal government makes on goods and services.

The total Federal government net expenditures on goods and services are classified into four categories: (1) compensation of employees, (2) new construction, (3) other net purchases from business, and (4) net purchases from abroad. All of these categories except the third (other net purchases from business) can be estimated independently. Therefore, the third category can be obtained residually by subtracting the total value for the other categories from the total net expenditure on goods and services made by the Federal government.

The data on the compensation of Federal employees (including retirement funds) come largely from the Civil Service Commission and the Bureau of Labor Statistics. It should be noted that the pay to the armed forces is considered compensation of Federal employees and that it includes not only all monetary payments but also the value of all food and clothing furnished in kind to the members of the armed forces. The inclusion of the payments in kind in the compensation of employees at the same time excludes such payments from "other net purchases from business," since this category is obtained residually.

The estimated value of new construction by the Federal government is based on a variety of sources. The expenditures on public residential housing are obtained from the Federal Public Housing Authority and other public housing agencies. Public nonresidential building estimates are derived from the F. W. Dodge Corporation contract award data and from reports of Federal agencies. Military and naval construction estimates are based on reports of the War and Navy Departments and data from the budget of the United States government. Other Federal construction was obtained from the Federal agencies, F. W. Dodge Corporation, and the *Engineering News-Record*. The compensation of Federal employees working on construction is counted twice: once as compensation of Federal employees and again as part of the value of new construction. The effect of this double counting is to lead to an understatement of "other net purchases from business," since the latter is determined residually, but it is believed that the amount of such understatement is small.

Net purchases from abroad are obtained by subtracting Federal government sales to abroad from Federal government purchases from abroad. The sales to abroad do not include either property income or loan transactions but consist mainly of such items as sales of surplus property and lend lease. The purchases from abroad also exclude property income and loan transactions but do include government cash gifts and contributions. Aside from gifts only direct purchases from abroad are included in this category. The purchase of foreign goods from domestic business is classed as "other net purchases from business." The data on all these transactions come from the Bureau of Foreign and Domestic Commerce.

"Other net purchases from business" are then determined residually from the estimate of total net Federal government expenditures on goods and services together with the estimates of government expenditures on compensation of employees, new construction, and net purchases from abroad. Any errors in these estimates will, of course, be reflected in the other net purchases from business. It should be emphasized that the estimate of total net Federal government expenditures on goods and services in no way relies on any of the specific estimates of its components.

STATE AND LOCAL EXPENDITURES ON GOODS AND SERVICES. The basic sources of data on state and local expenditures on goods and services are the annual reports of the Census Bureau on *State Finances*, *County Finances*, and *City Finances*. The data for counties are on a sample basis except for decennial years. Only cities of over 25,000 are covered by *City Finances* except in decennial years, when there is complete coverage. Certain special local agencies such as school districts and metropolitan water districts are covered only in decennial years. Owing to this partial coverage data must

be interpolated for the intercensal years. Expenditures of state and local governments are treated in essentially the same manner as the Federal government expenditures. (1) Adjustments are made for those items which do not reflect expenditures for either goods or services in order to derive an estimate of total expenditures on goods and services. This total is allocated among the various types of expenditure. Net construction is estimated first. Expenditures on highways, streets, and roads are derived from estimates of the Public Roads Administration. All other new construction by state and local governments is derived from the same general sources as is Federal government expenditures on this item. (2) The compensation of state and local employees is calculated, and (3) this amount plus the value of new construction is subtracted from the total state and local expenditures on goods and services to obtain other net purchases from business.

### **Total Expenditures as Representing Gross National Product**

The total of all the above estimates is one of the ways by which the Department of Commerce measures the gross national product. It should be realized that much of the source material that is used as the basis for these computations is not available until some time after the period to which it refers. For this reason current estimates will not have the benefit of much of the material that can be used at a later time. Therefore, the reliability of current estimates is apt to be much lower than that of estimates for past years. Furthermore, the reliability of the estimates for Census years is apt to be much higher than for the intervening years.

### **GROSS NATIONAL PRODUCT BY ALLOCATION**

The components of the allocation of gross national product are estimated in a relatively direct manner; no roundabout process similar to the commodity flow analysis is used. Just as a great many different sources were used for estimating the expenditures on gross national product, so also a great many sources must be used to estimate the allocations of gross national product. These will be discussed in a general way for each component of the allocation of gross national product.

### **Capital Consumption Allowances**

Capital consumption allowances include three elements: depreciation charges, accidental damage to fixed capital, and capital outlays charged to current expense. It has already been explained in Chap. 4 that each of these elements represents part of the diminution in capital goods which has

occurred. The total therefore represents the amount of capital goods that has been used up during a period.

**DEPRECIATION CHARGES.** One major part of depreciation charges in the economy is incurred by corporate enterprises. The amount of this corporate depreciation is estimated from *Statistics of Income*. During the war years amortization of emergency facilities was also considered part of depreciation charges by the Department of Commerce; these data were obtained from the WPB. The depreciation that occurs on farms is obtained from estimates made by the Department of Agriculture. Residential housing depreciation is calculated on the basis of the *Census of Housing* for 1940. The gross value of residential housing was estimated for this year on the basis of many detailed calculations, and the depreciation figure on residential housing for that year represents an estimated percentage decline in this gross value during the year. For previous and following years the gross value of residential housing was adjusted by the residential housing construction that had taken place; this series has already been discussed above in the section on new construction estimates. An adjustment was also made for the changing value of houses. Depreciation of housing was then calculated as a percentage of the estimated value of housing. Depreciation of noncorporate firms was estimated on the basis of the Census tabulations for partnerships, together with a great deal of other data. An estimate was obtained for the sales of unincorporated enterprises for each individual classification for 1939, and the level of noncorporate industrial depreciation was established. It was extended to other years by chaining it to the general movement of corporate depreciation.

**ACCIDENTAL DAMAGE TO FIXED CAPITAL.** This includes such items as the damage to capital goods by fire, airplane or train wreck, hurricane, etc. The main source of information is the National Board of Fire Underwriters. The Department of Agriculture furnishes data on forest fires. The Civil Aeronautics Commission and the Interstate Commerce Commission report on aircraft and train accidents. During the war ships that were sunk were included; this information was furnished by the War Assets Administration.

**CAPITAL OUTLAYS CHARGED TO CURRENT EXPENSE.** This category includes those currently produced durable producers' goods which business purchases and also uses up in the current period. These are not listed on business accounts as depreciation but rather are considered by them to be a cost. In order to avoid overstating the net national product these capital outlays charged to current expense must be deducted from gross national product. If this were not done, net national product would include as output producers' goods that had been used up in producing the current output. The value of producers' durable goods thus charged off is estimated on the basis

of the Bureau of Internal Revenue regulations regarding the life of various types of durable equipment to be used in tax computation. The total output in those categories that the bureau allows to be counted as current costs—dies, certain oil-drilling equipment, etc.—is estimated, and this total is considered to be the value of the capital outlays charged to current expense.

### **Indirect Business Tax and Nontax Liability**

Federal, state, and local governments all levy taxes that are defined by the Department of Commerce as indirect taxes. In actual practice these include all business taxes other than the corporate profits taxes. The nontax levies consist of licenses, fees, fines, etc., which are imposed by the various governments. These taxes and nontax payments are kept on an accrual rather than on a payment basis. Although they represent allocations of gross and net national product, they are not considered as factor payments in the economy and so are omitted from the national income measurement. As in the case of government expenditures the sources of information on indirect tax and nontax liabilities are not consolidated.

**FEDERAL INDIRECT TAX AND NONTAX LIABILITIES.** The Bureau of Internal Revenue compiles monthly tax and nontax collections, which are published in the *Treasury Bulletin*. These figures are adjusted so that they refer to the period in which they accrued rather than to the period in which they were recorded as being received by the government.

**STATE AND LOCAL INDIRECT TAX AND NONTAX LIABILITY.** These are obtained from the same sources that were used for state and local expenditures, the Census Bureau publications on *State Finances*, *County Finances*, and *City Finances*. Not all local taxes can be obtained directly from these sources, and for intercensal years a large area remains doubtful.

### **Business Transfer Payments**

These payments consist of the allocations which businesses make to cover consumer bad debts and to nonprofit organizations such as charities, foundations, and universities. They are considered to be a part of the allocation of gross and net national product. Under the present tax law businessmen are allowed to deduct business transfer payments as an expense in calculating their profits. With such a system of accounting, business transfer payments become a separate allocation of the market value of production just as do other costs and so constitute a part of the total allocations of gross product by a firm. Contributions that are not deductible as cost items would be treated differently; these contributions would be considered a disposition of assets by the firm, not a current allocation of the market value of production. Although business transfer payments are a part of gross and net



national product, they are not included as a part of national income, since they do not represent payments made to the factors of production. Data on business transfer payments for corporations are available in *Statistics of Income*. For other forms of business they are estimated on the basis of corporate transfer payments.

### **Adjustment for Statistical Discrepancy**

Gross national product can be estimated in two different ways. It can be calculated by adding up the estimated expenditures on gross national product made by consumers, government, business on capital account (including inventory change), and the rest of the world. This is done on the source side of the national income and product account. On the other hand it can be shown as the total allocations that are made to the factors of production: capital consumption allowances, indirect taxes, business transfer payments, and current surplus of government enterprises adjusted for the amount of subsidies paid by the government. These two different methods of estimation should theoretically give identical results. In actual practice, however, it is found that the process of estimation gives rise to slightly different answers. Since there is no possible way of finding which answer is more accurate, the placing of the statistical discrepancy between these answers on the allocation side of gross national product is a purely arbitrary decision. Its inclusion makes equal the gross national product as shown by the total expenditures of the economy and as shown by the total adjusted allocations. The magnitude of the statistical error shows the closeness of the answers obtained by the two different methods of estimating the total.

### **Subsidies**

Subsidies are payments by the government to producers for reasons other than the purchase of goods and services or the refunding of taxes. Since these payments are not purchases of current output, they cannot rightfully be classed as part of the expenditures on gross national product. The national income and product account should not, therefore, include such payments by the government. On the sources side of the account this correction of the total payments to producers is simple; it means merely that the subsidies are not included in the net purchases made by the government. On the allocation side, however, the problem is more difficult. The subsidies paid by the government to producers will be reflected in the allocations of the producers, and the total allocations by producers will, therefore, equal the market value of production *plus* the subsidies that were received. Thus, the allocations when added up will overstate the market value of production by the amount of the subsidies. The total of all allocations must be adjusted

downward by the full amount of the subsidies to get back to the actual market value of production. Net national product should also contain this adjustment, since it also is a valuation in terms of market value. National income, however, should not exclude subsidies, since it is designed to measure payments to the factors of production for their contribution, and these do include the subsidies that the producer passes on to the factors of production. Prior to the war practically all of the subsidy payments made by the Federal government were to farmers. Since the war there have been some payments to other producers. Information on the amount of these subsidies, together with the surplus of government enterprises discussed below, is reported by the Department of Agriculture, the United States budget, and the financial statements of government enterprises.

### **Surplus of Government Enterprises**

When government enterprises sell goods and services for more than they cost to produce, the difference is not considered profit, since the government is never considered as receiving profit. The excess of receipts over costs is called current surplus of government enterprises. It must be counted as a part of gross national product, since it represents an allocation of the market value of production. On the other hand it must be excluded from national income, since it does not represent a payment to the factors of production. The surplus of government enterprises is thus treated in exactly the opposite manner from government subsidies and therefore can be shown as a subtraction from government subsidies.

### **Wages and Salaries**

This is the largest and most reliable share of national income. It includes in addition to labor income in the form of wages and salaries such payments as commissions, tips, and bonuses. Income in kind, valued at its cost to the employer, is also included for the employees of such productive enterprises as the government, farmers, and eating and drinking establishments and for domestic servants. Work relief wages are included, but direct relief is not.

For the years beginning in 1940 a highly accurate series measuring total payrolls in industries covered by Federal Old Age and Survivors' Insurance and by unemployment compensation has been compiled by the Federal Security Agency, by combining data from the Bureau of Old Age and Survivors' Insurance, state unemployment compensation agencies, and the Railroad Retirement Board. Covered industries include the entire economy except government, farming, private households, and certain nonprofit organizations. The Department of Commerce adds the estimated value of tips to this series and deducts from it payrolls in Alaska and Hawaii and

payrolls of the few farms covered by Old Age and Survivors' Insurance to obtain total payrolls in covered industries in continental United States. Estimates for the period prior to 1939 for some industries were based on the *Census of Manufactures*, with corrections for level made by integration with the later data.

The estimates of wages and salaries for uncovered industries are based on a number of sources. For farms the Bureau of Agricultural Economics provides estimates. The number of domestic servants is estimated from the *Monthly Report on the Labor Force*, which is issued by the Department of Labor, and the wage rates of domestic servants are obtained from the price statistics of the Bureau of Labor Statistics. Some of the more important sources for nonprofit institutions include the Office of Education for private education, the *Census of Religious Bodies* for churches, and the *Census of Hospitals* and the American Hospital Association for nonprofit hospitals. Estimates of the Federal civilian payroll are based on data collected by the Bureau of Labor Statistics and the Civil Service Commission. Data for the armed forces are obtained from the War and Navy Departments. State and local nonschool employment is obtained from the Census Bureau, and public-school estimates are made on the basis of Office of Education data.

### **Social Insurance Contributions of Employers**

Data on social insurance contributions of employers are obtained from the Federal Security Agency. They are among the most accurate of the components of gross national product. The series reported by the Federal Security Agency relate to contributions received by the government, and these contributions are paid to the government up to three months after the wages and salaries to which they relate were earned. For this reason the Department of Commerce lags the series one-quarter of a year.

### **Other Labor Income**

Other labor income consists of compensation for injuries, employers' contributions to private pension and welfare funds, pay of military reservists, and other miscellaneous payments such as directors' fees, jury and witness fees, and pay to prison inmates. Data on compensation for injuries are obtained from the Federal Security Agency for all industries except railroads. For railroads they are obtained from the Interstate Commerce Commission. Employers' contributions to private pension and welfare funds are obtained in the form of informal estimates from the Bureau of Internal Revenue; the estimates are based on a tabulation of the number of such plans, which must be approved by the bureau for tax purposes. The miscellaneous pay-

ments such as directors' fees and jury fees are obtained on the basis of samples.

### **Net Income of Unincorporated Enterprises**

Net income of unincorporated enterprises is a composite income share, representing wages and salaries of proprietors and partners, interest on their capital, and possibly also rent. No attempt is made to separate these different elements. Net income does not include income received by sole proprietorships and partnerships in the form of privately paid dividends, interest, and property income (except for those unincorporated enterprises primarily engaged in lending or in renting property).

Net income of unincorporated enterprises is one of the least satisfactory of the income shares because of the fragmentary information available. For purposes of estimation unincorporated enterprises are divided into three groups: farms, professional services, and all other industries. Retail trade comprises about one-half of the last of these.

Data on farm income are obtained from the Bureau of Agricultural Economics of the Department of Agriculture. The estimates include the value of farm marketings, the value of the increase in the physical volume of farm inventories, the value of farm crops used for home consumption, government aids to agriculture, agricultural rents received by landlords living on farms, and the imputed rental value of farm dwellings. From this aggregate, estimated production expenses are deducted to obtain net income.

Estimates of professional services are obtained by multiplying an estimate of average net income by the number of practitioners. The average net income is obtained by the National Income Division on the basis of a questionnaire survey. The basic data for the number of practitioners come from the decennial census.

Income of other unincorporated enterprises by industry is estimated in one of two ways: Either gross receipts are multiplied by a profit ratio, or the number of proprietors is multiplied by an estimate of their average net income. Gross receipts of proprietorships and partnerships were reported in the industrial censuses of 1929 and 1939. Most of these were adjusted for undercoverage. For other years gross receipts were estimated indirectly. The Bureau of Internal Revenue tabulations of individual proprietorships and partnerships were used in the estimation of profit ratios for base years in most industries. In a few industries Bureau of Internal Revenue data were used to obtain average net income per proprietor. Census data were used in these cases to obtain the number of proprietors.

### Rental Income of Persons

The rental income of persons includes the net income accruing from the rental of individually owned tenant-occupied property, the imputed net rental return to owner-occupants of nonfarm residences, and the net royalties realized by individuals on patents, copyrights, and rights to natural resources. Room rentals are excluded because they are already included in net income of unincorporated enterprises.<sup>5</sup> Imputed net rents on farm residences and agricultural rents, similarly, are excluded because they are included in farm income. Net income of individuals primarily engaged in the real estate business and of individuals primarily engaged in writing and inventing are also included in net income of unincorporated enterprises. Rents and royalties are very similar to the net income of proprietors for analytical purposes, and the two categories are hard to separate.

Net farm rents of landlords not living on farms are obtained from the Department of Agriculture. Imputed rents of owner-occupied houses were estimated by the National Income Division. The number, type, and size of owner-occupied houses were obtained from the 1940 *Census of Housing*. Estimates were made of the gross rental value of these houses on the basis of rents received for comparable tenant-occupied units. Depreciation, maintenance, and other expenses were then deducted to obtain an estimate of net imputed rent.

For the remainder of rents and royalties received by individuals an estimate was made for 1941 on the basis of data in tax returns, adjusted to exclude farm and room rents and the overstatement of net rent because of the fact that some of the deductions for expenses were listed in other parts of the tax return rather than as rental expenses. For 1929 an estimate of gross receipts was obtained, and the ratio of gross receipts to net rent for 1941 was used to obtain an estimate of net rent for 1929. For intervening years the net rent data reported in individual income tax returns were used for interpolation.

### Corporate Profits

The corporate profits reported by the Bureau of Internal Revenue in *Statistics of Income* were adjusted by the Department of Commerce to a slightly different concept. The Department of Commerce does not consider depletion of mines, net capital losses and net losses on the sale of property,

<sup>5</sup> Net income from room rents is included in income of unincorporated enterprises only for boarding and lodging houses, hotels, etc. Net profit earned by private householders from incidental letting of rooms is excluded from the national income and product account.

state income taxes, and war losses as part of the costs of the firm, although these are allowed as deductions for tax purposes. These items were therefore added to the compiled net profit shown by the Bureau of Internal Revenue. The additional amount of profits shown to exist by audit, Federal Reserve System profits, and the rest of the world industry profits was also added. A number of other items are excluded. These are net capital gain, net gain on sale of property, domestic dividends received, foreign dividends received, profits of mutual insurance companies, and foreign income tax on branch profits.

**CORPORATE PROFITS TAX.** Corporate profits taxes are Federal and state corporate income taxes, adjusted for additional tax liability resulting from audit and for tax refunds resulting from such things as renegotiation of war contracts and the acceleration of the amortization of emergency facilities.

**NET DIVIDENDS.** Dividends received by business are subtracted from dividends paid out by business to obtain net dividends. This is computed from the information given in *Statistics of Income*.

**UNDISTRIBUTED PROFITS.** This item is what is left over after corporate profits taxes and net dividends have been subtracted from corporate profits. It is purely a residual; it does not correspond to the Bureau of Internal Revenue calculation of undistributed profits, since the original corporate profits figures are adjusted as outlined above.

### **Inventory Valuation Adjustment**

In the preceding part of this appendix it was noted that the valuation of inventories by corporate and noncorporate business except farms gives a book value from which the physical change in inventories in terms of market value could not be directly computed. It was pointed out that the change in book value of inventories would contain the effect of the change in the prices at which the inventory was valued as well as the actual physical change in the quantity of inventories. Inventories were therefore revalued to include only the effect of the physical change in inventories in gross national product. On the allocation side of gross national product it should be remembered that the stated profits figures are the result of business accounting that has valued inventories at cost or market, whichever is lower, and therefore that the stated profits figures will include the inventory profit or loss. For the gross national product measurement only the value of the real change in inventories should have been considered. An inventory valuation adjustment is necessary so that using the profits figures reported by business on the allocation side of gross national product will not result in error of the amount of the inventory profit or loss. Thus the inventory valuation adjustment is essentially an adjustment of the reported

profits figures for the amount of the inventory profit or loss. This adjustment is computed on the basis of the data discussed previously in connection with the change in business inventories;<sup>6</sup> the difference between the change in the book value in inventories and the calculated value of the real change in inventories is taken as the inventory valuation adjustment.

### Net Interest

The data for net interest require some explanation. It has already been pointed out in the appendix to Chap. 3 that the net interest which is paid by the government is not considered a part of the goods and services produced by the economy and therefore is excluded from gross national product, net national product, and national income. A sizable portion of government interest is paid to corporations and treated as a part of gross current receipts in their accounts. On the allocations side, however, this government interest payment will give rise to an additional amount of funds to be allocated. The government interest must therefore be deducted either from corporate profits or from interest payments in order to avoid overstating gross national product on the allocation side. The Department of Commerce has chosen to deduct it from interest payments. This has the effect of rendering the corporate profits figures a more accurate measure of those corporate profits which accrue to noncorporate stockholders, including in this the amount that has been earned by reinvestment in government securities. When net government interest is subtracted from interest payments to individuals, the interest item is made a balancing item and therefore has no real significance of its own. This is not so unfortunate as it might seem, since the use of imputed interest concepts has already made this series more or less useless for many analytical purposes.

The estimates for monetary interest paid and received by corporations are obtained from *Statistics of Income*. The Department of Agriculture furnishes information on farm interest. The Federal Reserve Board calculates a series on consumer debt. The Department of Commerce converts this to interest paid by consumers by multiplying it by an average interest rate.

Imputed interest is of two types. (1) It represents services in kind that certain financial institutions give in return for the use of the depositors' money. It is calculated by subtracting from the interest and dividends received by these financial intermediaries the amount of interest and dividends actually returned to the owners of the funds intrusted to the intermediaries. For the period from 1929 to 1934 the basic source of data was the Board

<sup>6</sup> See p. 111.

of Governors of the Federal Reserve System. After 1935 information collected by the Federal Deposit Insurance Corporation was used. (2) The second type of imputed interest is interest withheld from individuals by financial intermediaries such as life insurance companies and mutual banks. Information on this type of imputed interest is obtained from a variety of sources.

### SUMMARY

The use of two methods of estimating gross national product, which are substantially independent both as to the sources of data and as to the components involved, provides a useful check on the accuracy of the estimates. The statistical discrepancy between the two sides of the total is in no case greater than 2 per cent of the total; this is a surprisingly small amount. However, it must be remembered at all times that the estimates are subject to error and that the components are subject to far greater relative errors than is the total. What is a small error in comparison with the magnitude of the total gross national product may be a very large error in comparison with any one component. Furthermore, some of the components are computed on a residual basis, so that all the errors in the series used to compute the residual will accumulate. For instance, the savings estimates are computed as the residual left after personal income taxes and consumers' expenditures are subtracted from personal income. Any errors that may be present in personal income, consumers' expenditures, and personal income taxes, therefore, will all be accumulated in savings. The reliability of some of the series is very much greater than that of others. Therefore, in using any of the component series, its individual reliability for the purpose for which it is being used must be investigated. For many purposes, only the change from year to year is important, so that the absolute level of the figures does not matter. For other purposes, however, the level is also important.

The sources that are available now for estimating the components of gross national product in some cases leave much to be desired because of their lack of reliability and because they force the use of devious methods of estimation. However, the information that is available is continually increasing, and better use is being made of the material obtainable. During the war the dearth of statistical material on many parts of the economy was offset by the development of new sources by the Department of Commerce. The problem of obtaining yearly series for the components is essentially the problem of measuring the change that has taken place. Samples may give an excellent measure of change, although they cannot always be used to obtain absolute magnitudes. The Department of Commerce has obtained



sample information on many series; these samples receive their test of accuracy in periods that do afford more complete information. As time goes on, better and better sampling techniques will be developed. Furthermore, the importance of national income measurements has come to be recognized by the agencies that collect information. As a result the information obtained in the future will tend to fit more closely the theoretical concepts that the Department of Commerce is using in its estimates.

## 6. National Income Accounting and the Structure of the Economy

### NATIONAL INCOME ACCOUNTING AS A TOOL OF ANALYSIS

The previous chapters have built up a framework of national income accounting centralized about the national income and product account. The usefulness and the limitations of this framework can best be understood in terms of the problems involved in economic analysis. The analysis of statistical data can rarely disprove theoretical analysis, but it may very easily show that the theory is insufficient to explain what actually has occurred. Furthermore, statistical data providing a complete and integrated framework almost invariably reveal problems that stimulate theoretical analysis. Definite observed patterns of relationships among the various elements in the economy may suggest analytical approaches that would not have been developed in the absence of the empirical information.

Until national income statistics were developed, the economist knew very little about the actual magnitudes in the economy, and rough approximations were frequently used. Series of data on freight car loadings and on pig iron production were often used as indicators of changes in the level of production for the economy as a whole, irrespective of the fact that these series were subject to many influences besides changes in the level of total output. At times the different measures used as business barometers conflicted with each other, so that decisions about what was actually taking place were largely arbitrary. More serious than this, with such fragmentary pieces of

information it was impossible for the economist to relate different elements in the economy to each other. For instance, although it was known both logically and on the basis of what empirical evidence was available that wages fluctuated less than profits, it was not possible to relate the actual magnitudes of wages and profits to each other or to the magnitude of total national output. In the face of this unavailability of integrated data economics could not help but be unrealistic. Information about the economy was not sufficient to test theoretical developments, nor could it provide a body of data that was complete or consistent enough to benefit by analysis. Interaction between economic theory and empirical analysis on any significant scale was virtually impossible.

### **The National Income and Product Account**

With the advent of national income statistics, however, a marked change became possible. The national income and product account has been presented in the previous chapters as a production statement for the economy. Such a summary account is by its very nature highly related to the production statements of individual productive units and can, in fact, be built up by consolidating and combining such production statements; the exact process has been explained in some detail in the appendix to Chap. 3. The construction of a national income and product account permits the presentation in an interrelated framework of two salient aspects of production: on the one hand the cost and profit elements involved in creating the national product and on the other hand the outlays made by the various sectors of the economy to purchase the national product. The national income and product account establishes independent series of statistics for a large number of elements and simultaneously fits each of these elements into its place in the whole economy. It thus gives an over-all picture of the economy, shows how this picture is made up at any period, and indicates how it changes as time passes. None of this would have been possible if a method of consolidating and combining the mass of detailed data had not been worked out.

Despite the advantages of the summary national income and product account in enabling the economist to obtain a general picture of the economy and simultaneously to untangle the interrelationships among its different components, this presentation of the data imposes

considerable limitations. In order to obtain a summary that exhibits the results of the forces at work in the economy, some transactions are left out and others are combined. This process of summarization means that the actual mechanism by which the results are brought about cannot be traced in detail, since not all of the important factors are shown. From the national income and product account, for example, it is not possible to determine the type and quantity of taxes that each sector of the economy pays to the government. Income taxes paid by consumers are not shown at all, although they may have a profound effect upon the national output. Such items as government subsidies and transfer payments are included only through whatever effect they have on the sales or the allocations of business. The interest of the economist is frequently focused on the way economic forces influence the course of events rather than only upon the results of such forces. Only by such investigation can the whole mechanism of the economy be understood and attempts made to choose courses of action most rationally. But for any detailed or refined analysis that will explain the action of economic forces the national income and product account is too truncated to be highly useful. For this reason economists have sometimes preferred to use more elaborate sets of accounts that reveal the interrelationships among various sectors of the economy.

### **Accounts for the Sectors of the Economy**

One such set of accounts is described in the appendix to Chap. 4 on sector accounts. These sector accounts provide a system by means of which the interactions among the various sectors can be traced. The national income and product account shows only the final result of any specific change, *e.g.*, an increase in wages; in the sector accounts the steps in the chain of repercussions leading to that result can be followed through in much greater detail. An increase in wages would appear as an increase in the allocations of the business sector and simultaneously as an increase in individual incomes in the household sector. The change in the income of individuals would provide more funds to be allocated by households, so that personal taxes, personal saving, and consumers' expenditures all might change. In turn, the changes in the allocations of households will have repercussions upon the behavior of the sectors that receive these allocations. The system of sector accounts thus permits the economist to see the effects

of a change in one sector upon each of the other sectors and then, in turn, to trace the effects of these latter changes. The economy is made up of many different parts, and an adequate explanation of the operation of the system must be stated in terms of the behavior of these parts. Theoretical explanations must basically be couched in terms of the reactions of the individual elements in the economy; and if these individual elements are obscured by too much consolidation and combination, the development of adequate theoretical explanations will be found to be impossible. At the same time, however, a proper perspective must be maintained between these individual elements and the economy of which they are members; it is important to remember that the reactions of the individual elements take place within the framework of the whole.

The use of sector accounts was stimulated during the war by the problems of forecasting the reactions of the economy to the war program. It was essential to obtain some idea about the effect that the program of intended government war expenditures would have upon the economy. This could best be done by setting up accounts for each of the sectors and then estimating what adjustments each of the sectors would make to the government expenditure program. In the business sector the increased expenditures by the government would affect both receipts and allocations. Wages, business taxes, interest, dividends, and undistributed profits would all change, and these changes, in turn, would alter the income of the household sector and the tax receipts of the government. Further analysis would then be necessary to determine how each of the latter would adjust their allocations to this change in their income. If it were possible, for example, to forecast the proportion of the additional funds received by consumers that would be used for taxes, spent on consumers' goods, and saved, the resultant change in consumers' purchases from business would be known, and the secondary repercussion of the government expenditures on business could be estimated. The analysis could be carried out to further stages of refinement if proper estimates could be made about the timing of these adjustments. The theoretical basis of such analysis will be discussed in the following chapters, where the problem of the determination of the level of the gross national product will be taken up.

In the appendix to Chap. 4 the economy was divided into five

sectors to demonstrate the system of sector accounts. These sectors are (1) the business sector, (2) the household sector, (3) the government sector, (4) the rest of the world sector, and (5) the capital sector. The first three of these are easily recognizable as familiar parts of the economy, but the last two require some explanation. The first requisite in dividing the economy into sectors is that *all* parts of the economy should be covered by the accounts that are set up. A complete system of accounts must show both sides of every transaction. For instance, an increase in the sales of the business sector must be accompanied by entries showing where expenditures have increased. Such increases in expenditures on the products of the business sector could arise not only from increases in the outlays of households or the government but also from increases in purchases by foreign purchasers or by investors. These would appear in the accounts, respectively, of the rest of the world sector and of the capital sector. There is, of course, no reason why there should be five and only five sectors in the economy; it would be equally possible to split the economy into any desired number of groups. The business sector could have been broken down into an agricultural sector, a manufacturing sector, and a distributive sector. As a matter of fact, different parts of the business sector may react quite differently; a decrease in consumers' expenditures on food would have an effect very different from that of a decrease in consumers' expenditures on durable manufactured goods. For many purposes a system of only five sectors is too rough a classification to provide adequate analysis—even the amount of consolidation and summarization of accounts necessary to derive sector accounts such as these may be too great to permit accurate analysis, because in the process necessary information is left out.

This problem cannot be solved, however, by the division of the economy into a large number of sectors. The more detailed the classification of sectors is the more complex and cumbersome the use of the accounts becomes, so that what was originally gained in fitting all the diverse elements of the economy into a common framework is lost—the logical end of the process of refining the sector classifications this way would be the use of the original production statements for each productive unit, with additional accounts for each government unit and household. But when even as many as ten or twelve sectors

are used, the mechanical complexities of the accounts prevent any view of the economy as a whole.

Despite these difficulties a real need exists for a system that would allow a more detailed treatment of statistical information than does a five-sector system of accounting yet at the same time would embrace all parts of the economy in one integrated framework. Such a system, to be really successful, should reveal the structure of the economy in a comprehensive manner. Probably the most successful attempt in this direction has been the development of combined (rather than consolidated) accounts in the form of input and output relationships. The principle of the *Tableau économique*, developed by François Quesnay<sup>1</sup> in the eighteenth century, has in recent years been given statistical content by the work of Wassily Leontief<sup>2</sup> and of the Bureau of Labor Statistics in the Department of Labor.<sup>3</sup> In order to understand this system adequately the steps involved in setting it up must actually be traced through.<sup>4</sup>

#### A SYSTEM OF COMBINED ACCOUNTS FOR THE ECONOMY

A system of accounts that lists all of the allocations made by every industry and sector in the economy (including the capital sector) will necessarily cover every transaction concerned with current production. By presenting an allocation pattern for each industry and sector, a statement of the current activity of the economy will be obtained in complete detail; it will be shown later that this will also yield a pattern of income sources in the economy. It is this approach which will be used in developing combined accounts for the economy.

Very broad industrial classifications will be used. The purpose of

<sup>1</sup> François Quesnay, *Tableau économique*, reprinted in A. E. Monroe (ed.), *Early Economic Thought*, Harvard University Press, Cambridge, Mass., 1945.

<sup>2</sup> Wassily Leontief, *The Structure of the American Economy, 1919-1929*, Harvard University Press, Cambridge, Mass., 1941.

<sup>3</sup> U.S. Department of Labor, Bureau of Labor Statistics, *Full Employment Patterns, 1950*, Appendix A, "The Structure of the American Economy Under Full Employment Conditions," May, 1946 (mimeographed).

<sup>4</sup> The following treatment is *not* an explanation of the exact forms of input-output tables developed by Leontief and the Bureau of Labor Statistics. Transactions in terms of accounting procedures, rather than technological functions, are used as the basis for the input-output table in this chapter.

this chapter is primarily to show how such combined accounts are related to the national income measurements and also to the consolidated accounts for the sectors of the economy developed in the appendix to Chap. 4. At the same time, however, it is hoped that the classifications are sufficiently detailed so that an idea of the structure of the economy can be obtained from them and so that the repercussions of changes in one industry or sector on all other industries and sectors can be shown.

### **Classification of Allocations**

The first problem in developing such an allocation pattern is to make a list of allocations that will be applicable to all sectors of the economy. The different sectors make very different types of allocations. Producers purchase goods and materials from their own and from other industries, and they pay out wages, interest, dividends, and corporate taxes. Depreciation and undistributed profits also absorb a portion of their current income. A household, on the other hand, buys goods from various sectors of the economy and may pay wages to domestic servants, but it does not ordinarily <sup>5</sup> have such things as depreciation or dividends paid in its system of accounts. Households also allocate funds to personal saving, which is similar in nature to undistributed profits for corporations. A second consideration in setting up an allocation pattern is that it would be convenient to have the classification fit within the group of five sectors which have been used in the appendix to Chap. 4. Such a classification of allocations follows.

- A. Purchases from the business sector
  - 1. Agriculture
  - 2. Mining
  - 3. Contract construction
  - 4. Manufacturing
  - 5. Wholesale and retail trade
  - 6. Finance, insurance, and real estate
  - 7. Transportation
  - 8. Communications and public utilities
  - 9. Services

<sup>5</sup> In actual practice certain nonprofit institutions operated for the benefit of individuals are included by the Department of Commerce in the household sector; these may have institutional depreciation.



- B. Purchases from the rest of the world sector
- C. Payments to the government sector
  - 1. Indirect taxes
  - 2. Corporate profits taxes
  - 3. Social insurance contributions
  - 4. Personal taxes
- D. Payments to individuals (household sector)
  - 1. Wages and salaries
  - 2. Net income of proprietors
  - 3. Rental income of persons
  - 4. Net interest
  - 5. Net dividends
  - 6. Business transfer payments
  - 7. Government transfer payments
- E. Allocations made to gross saving (capital sector)
  - 1. Depreciation
  - 2. Undistributed profits
  - 3. Current surplus of government and government enterprises
  - 4. Personal saving
- Total allocations

### **Allocation Patterns for an Industry or Sector**

The allocations of any one sector or industry will, of course, not include all of these classifications, but each classification included will appear in the accounts of some of the sectors and industries. To illustrate, the allocations of the agricultural industry and of the household sector will be considered.

The agricultural industry makes some purchases from itself. The purchase of seed by one farmer from another farmer is recorded as a purchase by agriculture from the agricultural industry. Or again, the purchase of feed from farmers by livestock raisers is a purchase of agricultural goods by agriculture. Some purchases are made by agriculture from other industries. Agricultural machinery, fertilizer, and gasoline will be bought for farm use from retailers of these items, and in some cases such purchases may be made direct from the wholesaler or manufacturer. Agriculture will also make some purchases from the finance, insurance, and real estate industry; from the transportation

industry; from the communications and public utilities industry; and from the service industry. In fact, the only industry in the business sector from which agriculture will not make purchases is the contract construction industry. Any expenditure made by a farmer on contract construction would appear as an allocation of his capital funds, rather than as a part of his current accounts; the purchase of contract construction services for building farm facilities is the same as the purchase of capital equipment. Agriculture may make purchases from the rest of the world sector, but this occurs only when farmers buy foreign goods directly from the foreign country rather than from a retailer or wholesaler who had imported the goods himself. Agriculture makes some payments to the government sector in the form of taxes, but the amounts are small. The corporate form of organization is not usual in agriculture, so that corporate tax payments by this industry are small. Furthermore, farm laborers are not covered by social insurance regulations, so that social insurance contributions are extremely small. The personal tax payment classification is not applicable to agriculture, since personal taxes can be paid by individuals only in their capacity as members of the household sector, not in their capacity as businessmen. When the farmer pays personal taxes, he is allocating some of the net income that he has received from his business; this allocation does not appear in his business accounts (as a farmer) but rather in his personal accounts (as a householder). The farmer is both a producer and a consumer, and the accounts for these activities are considered separately. Referring again to the allocations of the agricultural industry, payments to individuals will include some wages and interest, but the major payment to individuals will be "net income of proprietors." This net income is the part of the farmer's gross current income that is left to him after all costs of production and all business taxes have been paid. This residual is, of course, not affected by what the farmer does with his income. His expenditures on consumers' goods, for example, are a part of his activities as a householder and are classed under the allocations made by households. In the allocations made by agriculture to gross savings (the capital sector) depreciation will be important. Buildings and equipment will necessarily be used up or worn out in the process of producing farm products. Few agricultural establishments are cor-

porations or government enterprises, so that the classifications "undistributed corporate profits" and "current surplus of government enterprises" are not very important. Personal saving, like personal taxes, is a classification that is not applicable to the agricultural industry; any personal saving done by farmers is done in their capacity as householders and appears in the allocations of the household sector. Table 30 gives for the year 1939 the allocations for the agricultural industry that have been discussed above.

*Table 30. Allocations of the Agricultural Industry, 1939 \**

Classifications of allocations		Allocations, billions of dollars
A. Purchases from the business sector . . . . .		3.8
1. Agriculture.....		0.3
2. Mining . . . . .		†
3. Contract construction . . . . .		‡
4. Manufacturing.....		0.3
5. Wholesale and retail trade . . . . .		2.7
6. Finance, insurance, and real estate..		0.5
7. Transportation.....		†
8. Communications and public utilities . . .		†
9. Services.....		†
B. Purchases from the rest of the world sector.		0.1
C. Payments to the government sector....		0.5
1. Indirect taxes .....		0.5
2. Corporate profits taxes . . . . .		†
3. Social insurance contributions . . . . .		†
4. Personal taxes . . . . .		‡
D. Payments to individuals (household sector) . . . . .		6.0
1. Wages and salaries.....		1.1
2. Net income of proprietors (adjusted for inventory valuation) and rental income of persons.....		4.5
3. Net interest.....		0.4
4. Net dividends . . . . .		†
5. Transfer payments . . . . .		†
E. Allocations to gross savings (capital sector) . . . . .		0.1
1. Depreciation . . . . .		1.0
2. Undistributed profits (adjusted for inventory valuation) . . . . .		†
3. Subsidies minus current surplus of government and government enterprises . . . . .		-0.9
4. Personal saving . . . . .		‡
F. Total allocations. . . . .		10.5

\* Source: See Table 32.

† Less than \$50 million.

‡ Not applicable.

The allocation pattern for any other industry or sector can be presented in much the same way. There will, of course, be differences in the items that are recorded, and the relative amounts of the various items may be entirely different. The household sector, for example, though very different from the agricultural industry, can be fitted into the same list of allocations. This is shown for the year 1939 in Table 31.

*Table 31. Allocations of the Household Sector for 1939 \**

Classifications of allocations		Allocations, billions of dollars
A. Purchases from the business sector . . . . .	..	63.7
1. Agriculture. . . . .	2.0	
2. Mining. . . . .	†	
3. Contract construction . . . . .	‡	
4. Manufacturing . . . . .	0.8	
5. Wholesale and retail trade . . . . .	35.7	
6. Finance, insurance, and real estate . . . . .	11.0	
7. Transportation. . . . .	1.2	
8. Communications and public utilities . . . . .	2.0	
9. Services. . . . .	11.0	
B. Purchases from the rest of the world sector . . . . .	..	0.4
C. Payments to the government sector . . . . .	..	2.4
1. Indirect taxes. . . . .	‡	
2. Corporate profits taxes . . . . .	†	
3. Social insurance contributions . . . . .	†	
4. Personal taxes. . . . .	2.4	
D. Payments to individuals (household sector) . . . . .	..	3.2
1. Wages and salaries . . . . .	2.2	
2. Net income of proprietors (including inventory valuation) and rental income of persons. . . . .	0.2	
3. Net interest. . . . .	0.8	
4. Net dividends . . . . .	‡	
5. Transfer payments . . . . .	†	
E. Allocations to gross saving (capital sector). . . . .	..	2.9
1. Depreciation. . . . .	0.2	
2. Undistributed profits (adjusted for inventory valuation) . . . . .	‡	
3. Subsidies minus current surplus of government and government enterprises. . . . .	‡	
4. Personal saving. . . . .	2.7	
F. Total allocations. . . . .	..	72.6

\* Source: See Table 32.

† Less than \$50 million.

‡ Not applicable.

In 1939 the household sector had \$72.6 billion to allocate among consumers' expenditures, taxes, and saving. Purchases from retailers and wholesalers by households amounted to \$35.7 billion. Households made some direct purchases from manufacturing and mining, but these were relatively small. With respect to the contract construction industry it is again true that contract construction services cannot be purchased out of *current* allocations. If a man has a house built to live in, he is making a capital expenditure that will be reflected as an allocation of *capital* funds in the economy. The other items in the allocations of households are self-explanatory, with the possible exception of wage and salary payments. For individual households this represents wages paid to domestic servants.<sup>6</sup>

### Input-Output Table for the Economy

Table 32 shows the allocation patterns of all industries and sectors of the economy. The statistics for the agricultural industry (column Ia) and for the household sector (column IV) are identical with the statistics given in Tables 30 and 31. Table 32 is simply a presentation in one table of all the allocations for the different industries and sectors; since it covers all industries and sectors, it shows all of the current allocations that are made in the economy.

From Table 32 it is possible to determine not only the allocations which are made by each industry and sector but also the sources of the income of each industry and sector. Allocations made by one industry or sector become sources of income to other industries or sectors. Table 32 shows how much each industry or sector has allocated to any specific industry, and so it shows exactly how much income this specific industry has received, and where this income has come from. Agriculture (row A1), for example, received \$10.5 billion gross income in 1939. The pattern of its sales to the various industries and sectors, *i.e.*, its sources of income, is given in Table 33 (pages 140-141).

This row is directly copied from row A1 in Table 32. The total gross income of the agricultural industry is, of course, equal to its total allocations shown in Tables 32 (column Ia) and 30. Row A1 shows

<sup>6</sup> In actual practice wages and salaries paid by the household sector are primarily the compensation that those nonprofit institutions included in the household sector pay their employees.

Table 32. Input-

(In billions)

	I. Total business sector	Ia Agri- culture	Ib. Mining	Ic Contract con- struction	Id Manu- facturing
A. Purchases from the business sector . . .	139.0	3.8	1.6	4.0	32.0
1. Agriculture . . . . .	7.8	0.3	†	0.4	2.0
2. Mining . . . . .	3.2	†	0.2	†	2.9
3. Contract construction . . . . .	51.4	0.3	0.2	0.9	17.2
4. Manufacturing . . . . .	58.6	2.7	0.5	2.2	5.2
5. Wholesale and retail trade . . . . .	3.6	0.5	0.2	0.1	1.0
6. Finance, insurance, and real estate . . . . .	6.0	†	0.2	0.4	2.0
7. Transportation . . . . .	4.6	†	0.3	†	1.5
8. Communications and public utilities . . . . .	3.8	†	†	†	0.2
9. Services . . . . .					
B. Purchases from the rest of the world sec- tor . . . . .	2.7	0.1	†	†	1.4
C. Payments to the government sector . . .	12.6	0.5	0.3	0.1	4.6
1. Indirect tax and nontax liability . . . . .	9.4	0.5	0.2	†	3.1
2. Corporate profits tax liability . . . . .	1.4	†	†	†	0.8
3. Social insurance contributions ‡ . . . . .	1.8	†	0.1	0.1	0.7
4. Personal tax and nontax payments . . . . .					
D. Payments to individuals (household sec- tor) . . . . .	58.0	6.0	1.4	2.1	16.3
1. Wages and salaries §. . . . .	36.0	1.1	1.1	1.5	14.0
2. Net income of proprietors (adjusted for inventory valuation) and rental in- come of persons . . . . .	14.5	4.5	0.1	0.6	0.4
3. Net interest ¶ . . . . .	3.3	0.4	†	†	0.1
4. Net dividends . . . . .	3.7	†	0.2	†	1.8
5. Transfer payments . . . . .	0.5	†	†	†	†
E. Allocations to gross saving (capital sec- tor) . . . . .	8.4	0.1	0.4	0.1	2.9
1. Capital consumption allowances . . . . .	7.9	1.0	0.4	0.1	2.2
2. Undistributed profits (adjusted for in- ventory valuation) and statistical discrepancy ¶ . . . . .	1.0	†	†	†	0.7
3. Current surplus of government and gov- ernment enterprises, minus subsidies . . . . .	-0.5	-0.9	†	†	†
4. Personal saving . . . . .					
F. Total allocations . . . . .	220.7	10.5	3.7	6.3	57.2

\* Footnotes: See p. 140.

*Output Table, 1939 \***of dollars)*

Ie. Wholesale and retail trade	If. Finance, insurance, and real estate	Ig. Transportation	Ih. Communications and public utilities	Ii. Services	Ii. Rest of the world sector	III. Government sector	IV. Household sector	V. Capital sector	VI. Total economy
81.1	2.9	1.9	2.1	9.6	3.8	5.2	63.7	9.0	220.7
5.1	†	†	†	†	0.5	0.2	2.0	.....	10.5
0.1	†	†	†	†	0.5	†	†	.....	3.7
.....	.....	.....	.....	.....	.....	2.3	.....	4.0	6.3
31.4	†	0.4	0.2	0.8	1.1	0.8	0.8	3.1	57.2
35.8	2.0	1.2	1.5	7.5	1.5	1.2	35.7	1.9	98.9
1.2	0.3	†	0.1	0.2	†	0.2	11.0	.....	14.8
3.1	†	†	†	0.3	0.1	0.1	1.2	.....	7.4
1.8	0.2	0.3	0.2	0.3	†	0.3	2.0	.....	6.9
2.6	0.4	†	0.1	0.5	0.1	0.1	11.0	.....	15.0
1.2	†	†	†	†	†	†	0.4	0.9	4.0
3.0	1.9	1.0	0.9	0.3	†	0.3	2.4	.....	15.3
2.4	1.7	0.7	0.6	0.2	.....	.....	.....	.....	9.4
0.2	0.1	0.1	0.2	†	†	.....	†	.....	1.4
0.4	0.1	0.2	0.1	0.1	†	0.3	†	.....	2.1
.....	.....	.....	.....	.....	.....	.....	2.4	.....	2.4
12.4	8.1	4.3	2.7	4.7	0.2	11.2	3.2	.....	72.6
8.7	2.3	3.4	1.5	2.4	†	7.5	2.2	.....	45.7
2.9	3.8	0.1	†	2.1	.....	.....	0.2	.....	14.7
0.1	1.6	0.6	0.4	0.1	0.1	1.2	0.8	.....	5.4
0.4	0.3	0.2	0.7	0.1	0.1	.....	.....	.....	3.8
0.3	0.1	†	0.1	†	†	2.5	†	.....	3.0
1.2	1.9	0.2	1.2	0.4	.....	-1.4	2.9	.....	9.9
0.6	2.0	0.4	0.8	0.4	.....	.....	0.2	.....	8.1
0.6	-0.1	-0.2	†	†	.....	.....	.....	.....	1.0
†	†	†	0.4	†	.....	-1.4	.....	.....	-1.9
.....	.....	.....	.....	.....	.....	.....	2.7	.....	2.7
98.9	14.8	7.4	6.9	15.0	4.0	15.3	72.6	9.9	322.5

Table 33. Sales by  
(In billions)

	I Total business sector	Ia. Agri- culture	Ib. Mining	Ic Contract con- struction	Id. Manu- facturing
A. Purchases from the business sector 1. Agriculture	7.8	0.3	†	0.4	2.0

\* Source: See Table 32.

† Less than \$50 million.

‡ Not applicable.

the sources of the total income of agriculture by industry and sector, and column Ia shows how this income was allocated among industries and sectors. The row and the column, in fact, form the two halves of the production statement for agriculture. The row for any other industry or sector can be related to its respective column in the same way. Table 34 shows the row that applies to the household sector; it gives the sources of income to households.

Footnotes to Table 32:

\* Source: This table represents a compilation of statistics from a variety of sources and is intended to show structural relationships rather than exact measurements. The following data were obtained from "National Income," supplement to the *Survey of Current Business*, July, 1947, U.S. Department of Commerce: corporate profits tax liability, social insurance contributions, personal tax and nontax payments, payments to individuals, undistributed profits, current surplus of government and government enterprises minus subsidies, consumers' expenditures, government expenditures, expenditures of the capital sector. The allocation of capital consumption allowances and indirect taxes was made according to estimates given in "Forecasting Postwar Demand," by Jacob L. Mosak, *Econometrica*, Vol. 13, No. 1, January, 1945. The magnitude and the allocations of the interindustry transactions were estimated on the basis of the following: Wassily W. Leontief, *The Structure of the American Economy, 1919-1929*, Harvard University Press, Cambridge, Mass., 1941; "Exports, Imports, Domestic Output, and Employment," *Quarterly Journal of Economics*, Vol. 60, No. 2, February, 1946; and "Wages, Profit, and Prices," *Quarterly Journal of Economics*, Vol. 61, No. 1, November, 1946; Bureau of Labor Statistics, Department of Labor, *Full Employment Patterns, 1950*, Appendix A, "The Structure of the American Economy Under Full Employment Conditions," Washington, May, 1946 (mimeographed); Bureau of the Census, Department of Commerce, *Biennial Census of Manufactures, 1939; Census of Business, 1939*, Vol. 5, "Distribution of Manufacturers' Sales," Vol. 2, "Wholesale Trade," Vol. 1, "Retail Trade," Part 3, Vol. 3, "Service Industries," Vol. 4, "Construction."

† Less than \$50 million.

‡ Includes both employers' and employees' contributions.

§ Includes other labor income.

|| In order to preserve symmetry with the national income and product account, the concept of net interest has been used here rather than actual interest paid. For an explanation of the concept see the appendix to Chap. 3.

¶ The statistical discrepancy (0.5) has arbitrarily been assigned to the largest industry in the economy, wholesale and retail trade.



*Agriculture, 1939 \***(of dollars)*

Ie Whole- sale and retail trade	I <sub>f</sub> . Finance, insur- ance, and real estate	I <sub>g</sub> . Trans- portation	I <sub>h</sub> Communi- cations and public utilities	I <sub>i</sub> Services	II Rest of the world sector	III Govern- ment sector	IV House- hold sector	V Capital sector	VI Total economy
5.1	†	†	†	†	0.5	0.2	2.0	‡	10.5

Table 34 has been copied from row *D* in Table 32. Its total equals the total of the household sector's allocations as shown by column IV of Table 32 and by Table 31. The row and column for the household sector, again, form the two halves of the current account of this sector. This account is very similar to that shown for the household sector on page 87 in the appendix to Chap. 4. The input-output table shown in Table 32 thus provides a method of showing the production statements for each industry and sector in the economy and at the same time shows the interrelationships among these accounts.

### **The Relation between the Input-Output Table and the Accounts for a Firm**

The national income and product account—the production statement for the economy—was derived by combining *and consolidating* the production statements of individual firms. The total of the national income and product account is designed to reflect the market value of the national output, so that it is not correct to include all the current transactions found on each firm's production statement in the total production statement for the economy. The volume of current transactions in the economy far exceeds the market value of current output; according to Table 32 the total of all transactions on current account in the economy for 1939 was \$322.5 billion, whereas gross national product was \$90.4 billion. In deriving the value of current production, therefore, certain of the current transactions must be omitted. To avoid duplication in the value of current output current interfirm transactions cannot be counted. The national income and

*Table 34. Payments to the*  
(*In billions*)

	I. Total business sector	Ia. Agri- culture	Ib. Mining	Ic. Contract con- struction	Id. Manu- facturing
D. Payments to individuals (household sector).....	58.0	6.0	1.4	2.1	16.3

\* Source: See Table 32.

product account includes only transactions between producers, investors, the government, and households. This is not true of the input-output table, however. The production statements of individual firms are combined—added together—but they are not consolidated. Nothing is omitted. The row and column for any industry or sector together show the complete set of transactions that appear on the production statements of all firms or units in the industry or sector. No transactions that appear on the current production statement of any unit are omitted. The input-output table therefore shows in full the interrelation among the various parts of the economy. The use of a finer classification in the input-output table would mean that the accounts for the individual firms or units would be presented in a less highly combined form but the totals of allocations and of gross income would be the same. These totals do not refer to the market value of total output; rather, they show the total value of the current transactions into which the firm enters, both on the income side and on the allocation side.

The input-output table thus presents a system of combined accounts covering the entire economy. Every transaction that affects current production is shown as a source of gross income to the industry or sector selling the goods and as a cost or allocation by the industry or sector buying the goods. In this way the dual aspect of transactions is revealed within the workings of the economy. What the input-output table has accomplished is the construction of a framework that can be used in classifying transactions and in revealing the basic structure of the economy.

*Household Sector, 1939 \***(of dollars)*

Ie. Whole-sale and retail trade	If. Finance, insurance, and real estate	Ig. Transportation	Ih. Communications and public utilities	Ii. Services	II. Rest of the world sector	III Government sector	IV. Household sector	V Capital sector	VI Total economy
12.4	8.1	4.3	2.7	4.7	0.2	11.2	3.2	. . . .	72.6

## THE STRUCTURE OF THE ECONOMY

**The Meaning of Input and Output**

The system of combined accounts shown in Table 32 has been referred to as an input-output table. It is called an input-output table because the columns show the inputs of goods, materials, and services into the various industries and sectors and the rows show where the outputs of the industries and sectors go. For an individual firm the meaning of the terms "input" and "output" is clear. The firm purchases such things as raw materials, labor, fuel, and power, which it uses in conjunction with its plant and equipment to produce goods or services for the market. What is used up in the process of production is input. Strictly speaking, certain of the taxes that a firm pays and part of its profits may not represent actual inputs of goods or services; nevertheless, from the point of view of the economy as a whole these payments are necessary for this production to take place and so are part of the inputs that are required to obtain the output of the firm. It is in this light that the input requirements of the economy are viewed in the input-output table: The market value of production is thus divided up among the factors of production and the other elements that have a legal claim on it. The output pattern, similarly, shows how the output of a given firm, industry, or sector is divided up among other firms, industries, and sectors. The input-output pattern as a whole shows how each industry and sector contributes in creating production and how they share in consuming that production. It shows what is used in carrying out production in each part of the economy and what happens to the output of each part of the economy.

### **The Stability of Input-Output Patterns**

A number of forces are important in determining the nature of the input-output patterns in the economy. In many industries technology to a very large extent determines the relationship among the amounts of labor, materials, and machinery that are used. The steel industry, for example, employs processes that use fairly definite ratios of such things as coke and ore. Over a period of time changes in technology may cause changes in the process and thus in the relative amounts of the input factors, but as a general rule such change, for an industry as a whole, is slow, and the input-output pattern does not shift violently from year to year. Institutions may also play a dominant role in the stability of specific industries. Over a period of time a system of distribution through wholesale and retail traders may be established such that goods normally flow through certain channels to reach the consumer. These channels may shift over the years, and the place of retail and wholesale trade may change in importance, but such changes as these are usually gradual. Finally, the tastes and requirements of the ultimate consumers have much to do with the shaping of the general patterns. The fact that households spend a large and relatively fixed part of their incomes on food means that food products always form a large portion of the national output. Consumers today spend less of their incomes on food than did consumers fifty years ago, but this change has been gradual, and in any short period no very great change has occurred.

The existence of some stability in the pattern of resource allocations and output indicates that the distinguishing features and important elements of the society continue over a period of years and that change usually comes slowly to anything as basic as the nature of the economic system. There can, it is true, be periods of sharp change brought about by such phenomena as deep depressions or wars, but these changes are often short-run reactions overlaid on the basic nature of the economy. Changes in the patterns that will be brought about by unusual forces acting in the short run can often be predicted, but the long-run evolution of a system is not as easily foreseen, since the number of possibilities increases rapidly with the length of the period.

### **The Structure of the Economy**

The system of combined accounts reveals the basic structural characteristics of the economy and is therefore very useful in developing an understanding of how the economy functions. Comparisons of input-output patterns over an extended period of time would reveal much about the direction in which the evolution of the economy is proceeding. The shiftings of the patterns would show the impact of technology on the processes of production. In a finer industry breakdown, for example, such things as the introduction of rayon and nylon would have obvious repercussions on the input factors for the textile industry. Major innovations such as the introduction of the automobile and the radio lead to rapid growth in some industries and consequent decline in other industries. The input-output patterns record the way in which the economy adjusts the structure of industry and the relationship of sectors to such changes. Similarly, changes in institutions or changes in tastes will be reflected in changes in the input-output patterns.

The comparison of national income and product accounts over a period of time becomes less and less meaningful as the length of the period over which comparisons are made becomes longer. Comparison of such aggregate measurements takes for granted comparable structures of the economy in different periods; and if significant differences in the structures do exist, the validity of such aggregate measurements is seriously impaired. Input-output tables therefore provide the analyst with a much more accurate portrayal of what has happened in the economy than do most other types of national income accounting measurements. The complex patterns in the economy cannot be reduced to simple summary measurements, because the changes that take place in the economy cannot themselves be described in summary fashion. The significance of economic interrelationships can best be understood by attempting to trace one transaction through *all* its repercussions in the economy. For example, suppose that a foreign country increases its orders from an American manufacturer. The increased orders may lead the manufacturer to try to increase his output by hiring more labor and purchasing more materials from other producers. The laborers in the plant will receive additional income, and other businesses will supply additional goods and materials. Since

the workers as a group are receiving more income, they will be able to spend more money on consumption goods. Producers supplying additional goods and materials will find their inventories declining and may, in turn, step up their production to bring their inventories back to normal and to anticipate future sales. Each of these reactions on the part of the workers and the producers of raw materials will, in turn, have its repercussions. The increase in expenditures on consumers' products will lead firms engaged in producing such goods to attempt to expand. The expansion of raw-materials producers will further increase both the amount paid to labor and the purchases from still other producers. Again, each of these transactions can be traced further; like the first card to fall in a house of cards, the original transaction sets up a series of repercussions, with each reaction producing another reaction. In the following chapters the exact mechanism by which this process takes place and its total effect upon the economy will be examined. For the present it is important to realize that there are many counterbalancing forces in the economy and that while one sector is increasing its purchases, another sector may be reducing its purchases; the expansionary effect of the increases will tend to be balanced by contractions elsewhere in the economy. The balance is not always even, however; and when it is not, the economy will undergo a general expansion or contraction.

It is not possible for any one cell in the input-output table to change unless one or more other cells also changes.<sup>7</sup> An increase in the cell in Table 32 representing agriculture's purchases of manufactured goods, for example, would, of course, mean that agriculture had increased its total allocations. The funds for these increased allocations must come from somewhere; either there must be an offsetting reduction in other allocations made by agriculture, or else some source of agriculture's gross income must increase. Otherwise, the production statement of agriculture would not balance. The manufacturers, furthermore, will now have an increase in gross income, since agriculture's purchases from them have increased; either other gross income must at the same time fall, or else more funds will be available to be allocated and some item in the allocations must increase, so that the allocations of gross income will remain equal to the total amount of

<sup>7</sup> With the single exception, of course, of the purchases of any one sector from itself.

gross income available to be allocated. The requirement that gross income equal gross allocations for each industry and sector thus links each cell in the input-output table with the rest of the cells.

#### THE RELATION BETWEEN THE NATIONAL INCOME AND PRODUCT ACCOUNT AND THE INPUT-OUTPUT TABLE

The input-output table is a comprehensive statement of the accounts of all the industries and sectors in the economy, and it contains all the information that is contained in the national income and product account. Study of it will show how and where this information is recorded in it.

#### **Allocations of National Income and Product**

The allocation side of the national income and product account appears in Table 32 as a portion of the *column* showing totals for the whole economy. The total of this column represents all the allocations that are made out of current gross income in the economy. If the transactions among industries, government interest, current surplus of government enterprises minus subsidies; transfer payments; personal income taxes; and personal saving are omitted, the remaining items will add up to gross national product. The derivation of the allocation side of the national income and product account is shown in Table 35.

#### **Sources of National Income and Product**

The source side of the national income and product account can be derived from the row showing the totals for all industries and sectors. Consumers' expenditures can be obtained by deducting personal saving and personal tax payments from total allocations of the household sector. Investment expenditures are the total allocation of the capital sector. Government expenditures on goods and services can be obtained by subtracting net government interest, transfer payments, and the government surplus <sup>8</sup> (or adding the deficit in this case) from total allocations of the government sector. These computations are shown in Table 36.

<sup>8</sup> The surplus of government alone—excluding the item “current surplus of government enterprises minus subsidies.” This figure appears in the cell showing the allocations of the government sector to gross saving.

Table 35. *Gross National Product Derived from Input-Output Data* \*  
(In billions of dollars)

	Total allocations for all industries and sectors	Allocation side of national income and product account
A. Business sector.....	220.7	†
1. Agriculture.....	10.5	†
2. Mining.....	3.7	†
3. Contract construction.....	6.3	†
4. Manufacturing.....	57.2	†
5. Wholesale and retail trade.....	98.9	†
6. Finance, insurance, and real estate.....	14.8	†
7. Transportation.....	7.4	†
8. Communications and public utilities.....	6.9	†
9. Services.....	15.0	†
B. Rest of the world sector.....	4.0	†
C. Government sector.....	15.3	
1. Indirect taxes.....	9.4	9.4
2. Corporate profits tax.....	1.4	1.4
3. Social insurance taxes.....	2.1	2.1
4. Personal income taxes.....	2.4	†
D. Payments to individuals (household sector).....	72.6	
1. Wages and salaries.....	45.7	45.7
2. Net income of proprietors and rental income of persons.....	14.7	14.7
3. Net interest.....	5.4	4.2 ‡
4. Net dividends.....	3.8	3.8
5. Transfer payments.....	3.0	†
E. Allocations to gross savings (capital sector).....	9.9	
1. Capital consumption allowances.....	8.1	8.1
2. Undistributed corporate profits.....	1.0	1.0
3. Current surplus of government minus subsidies.....	-1.9	†
4. Personal saving.....	2.7	†
F. Total, gross national product.....	..	90.4

\* Data derived from Table 32.

† Not applicable.

‡ After subtraction of government interest.



Once the national income and product account has been derived, it is a simple matter to derive net national product and national income. The process has already been described in Chap. 4; the appropriate elements can be found in the input-output table.

*Table 36. Sources of Gross National Product, from Input-Output Data \**  
(In billions of dollars)

	Government sector	Household sector	Capital sector	Total
Total allocations .....	15.3	72.6	9.9	97.8
Less:				
1. Personal taxes .....	....	2.4	...	2.4
2. Personal saving; government surplus .....	-1.4	2.7	..	1.3
3. Net government interest; transfer payments .....	3.7	....	...	3.7
Equals: expenditures for gross national product.	13.0	67.5	9.9	90.4

\* Data derived from Table 32.

### **Income Originating by Industry; Personal Income**

The method used in deriving the allocation side of the national income and product account can be applied to the industry and sector accounts in Table 32 to show the origin of gross product, net product, and income of the factors by industry. A comparison of the lower part of the input-output table with Table 29 in Chap. 5 showing income originating by industry will reveal the similarity between these two sets of data. All the information in Table 29 is contained in the input-output table; however, the items are grouped differently, and the input-output table contains certain additional transactions.

Finally, it should be pointed out that the row and column for the household sector in Table 32 are, in reality, the same as the personal income account given in Tables 22 and 23, Chap. 4. The only difference lies in the classifications used for income and allocations; the totals are the same.

The input-output table thus is a complete set of combined accounts

for the economy. It shows the structure of the economy at any one time, and by comparison of input-output tables for different years it is possible to see how this structure changes. At the same time the input-output table clearly illustrates the dual aspect of every transaction and provides a system that shows the interrelation between industries and sectors. It contains all the information available in the national income and product account, so that gross national product, net national product, and national income can all be derived from it, not only as national totals but also by industry and sector. Finally, the input-output table provides a system of sector accounts that are much more complete and detailed than those given in the appendix to Chap. 4 yet are simple enough to provide greater understanding of the transactions involved.

### NATIONAL WEALTH

Before leaving the structure of the economy, mention should be made of one final type of account that can throw light on the nature of the economy. In the discussion of the function of accounts in Chap. 2 it was pointed out that the firm needs a balance sheet that shows the value of the assets it owns and the claims existing against these assets. A similar account would be useful for the economy as a whole. Such an account would, in effect, list the value of the assets in the nation and show who owned them—in other words, it would exhibit national wealth. In drawing up such an account many of the problems that were met in national income accounting would again be encountered.

#### **The Valuation of the Assets of the Economy**

It would be possible to take a national inventory, in physical terms, of all the concrete things that comprise wealth. This physical inventory would then have to be converted into a national wealth account for the economy as a whole. This process would involve many of the same problems that arose in deriving the national income and product account from the production statements of individual firms. The problems of classifying, consolidating, and combining individual balance sheets would have to be faced. Furthermore, setting up a national wealth account would involve a careful consideration of the meaning of the different elements of wealth. Such things as bonds, stocks, and

mortgages are indications of ownership and would appear on one side of the national balance sheet. On the other side would be the assets to which the claims refer. And again as was true for income and product account, what appears as an asset for one sector may very well be a liability for another. A bond, for instance, is to the person who holds it evidence of a claim to an asset; it would therefore appear on the asset side of his balance sheet. The same bond, however, is, to the firm that issued it, an obligation to pay a debt, and it therefore would appear on the liability side of that firm's balance sheet. Thus the problem of the interrelation of individual balance sheets in the economy is similar to the problem of the interrelation of individual income statements.

The basis upon which the assets of the economy are to be valued also raises a number of questions. An asset is valuable essentially because it is expected to yield valuable services over a future period of time. The market value of the assets represents an estimate of the present value of these future services; this suggests its use as a measure. At best, however, market value is a very rough estimate of the worth of the future services of the asset; and since the future is always uncertain, there is no way of telling how accurate this valuation may be. Valuation of an asset on the basis of its original cost minus the depreciation which has been charged against it, on the other hand, may have little connection with the present or future usefulness of the asset; price changes may have occurred so that such a valuation of the asset has little relation to the current period. Reproduction cost, finally, may not be satisfactory as a method of valuation in an economy where new inventions and new processes are continually being developed.

### **The Components of National Wealth**

As yet, the concepts of national wealth have not been sufficiently developed so that the components of the national wealth account stand out clearly. But it is clear that there will be distinct categories of different types of assets and that these will be distributed among the various sectors of the economy. One of the main components of national wealth will be buildings and other construction; much of the investment in the country goes into this channel. Another main component will be the movable equipment of farms and factories. These

represent what is usually thought of as the technical capacity of the country; in conjunction with labor and materials, they determine what the country can produce. The actual inventories of materials, semi-finished products, and finished products represent another portion of national wealth that is necessary for the operation of the economy. Finally, durable consumers' goods should not be overlooked; like other forms of national wealth they yield a flow of services to their owners.

Examination of the national wealth required by various industrial sectors for production would indicate what would be needed to expand or maintain capacity in these sectors. When an economy grows and this growth entails an expansion of capacity, the capital equipment requirement for this additional capacity becomes important. Knowledge of the magnitude of the various components of national wealth would permit a greater exploration of the growth patterns of the economy. Although some exploratory work has been done in the field of national wealth, current estimates are not as yet available. The need for such information is becoming apparent, and in all probability a standardized methodology will emerge before long. The development of national income concepts gives some inklings of the basic nature of this methodology. National wealth will be represented by a set of accounts rather than a single magnitude. There will be a number of concepts that will show national wealth from different points of view, and the main value of the national wealth account will probably lie in the interrelationship of the component parts for the various sectors of the economy rather than in the absolute magnitude of the total.

*Part Two*

*Income Analysis*



## 7. The Economic Setting of the Problem

### THE GROWTH OF THE UNITED STATES ECONOMY, 1790 TO 1947

The past 170 years have seen the rise of the United States from a small colony to a nation unsurpassed in its productive powers and wealth. In the early period of our history the economic system was relatively simple; its problems were those of overcoming the physical barriers imposed by nature. Land had to be cleared, shelter had to be erected, and protection had to be secured. Today the outlook is very different. The economy has developed into a complex and delicate mechanism, the problems of which are maintaining full employment and securing a proper allocation of resources. Before the operation of the modern economy is studied, it will be useful to trace in broad outline the evolution of the economy into its present form.

#### **Population Growth in the United States**

It is difficult to realize that the total population of the United States in 1790 was equal to only about half of the number of people who now live in New York City. Since 1790 the population has risen from about 4 million to over 140 million. When the United States was first formed, no city had as many as 50,000 people and only six had a population of over 8,000. Ninety-five per cent of the population was rural, and there was practically no manufacturing. The great growth in population since then has been essential to the achievement of the standard of living that now prevails in the United States. The building of the railroads and the opening up of the continent required a vast amount of man power. The needs of a growing population and an expanding country forced the growth of the large heavy industries.

The existence of mass markets permitted the development of industries that produced by mass methods and at the same time provided labor to supply these industries. The economic growth of the United States has been inseparably linked to the growth in population and territory, and the evolution of the system cannot be analyzed without taking both of these into account.

In future years population growth similar to that of the past 170 years cannot be expected. The growth in the past was the result of both a high birth rate and of continued immigration from Europe; the birth rate has declined, and immigration has been limited. Unless there is a marked change in immigration policy or measures are undertaken to increase the birth rate, the size of the population in the United States will probably not increase very much and may even decline within a relatively short period. The future of the economic system thus cannot be forecast by extrapolating past trends. Far different basic forces will be operating in the future, and the growth that takes place will be quantitatively and qualitatively different.

### **The Growth in Production and Productivity**

Production, obviously, has grown along with the growth of the economy. Measuring the amount of this growth quantitatively, however, is more difficult than measuring the growth in population. Production in the economy is made up of many different kinds of output, the variety of which is constantly changing. In order to compare production in two different periods a method must be devised that will weight the various categories of output according to some system that indicates their relative importance. Output of nylon stockings, for instance, must be added in some way to output of machine tools and of telephone conversations, and the total of all these compared with a total that includes raw cotton, stagecoaches, and muskets. In most production indexes this problem is solved by counting each good or service in proportion to its market value. For present purposes, it is sufficient to show how, by such a method, the gross national product data can be converted to indicate the changes that have taken place in physical production and productivity.

**INCREASES IN PRODUCTION—GROSS NATIONAL PRODUCT IN CONSTANT PRICES.** Gross national product is the current market value of the goods and services produced in the economy during a given period. Com-



parison of gross national product data for two periods does *not* show the increase in the physical quantity of goods produced; it shows the change in the *total value* of goods produced. This change in total value is brought about by the combination of two types of changes: (1) changes in the prices of commodities and (2) changes in the physical amount of goods produced. In order to separate the latter type of change, the value of the goods would have to be computed in terms of some set of constant prices, so that any change in the total would

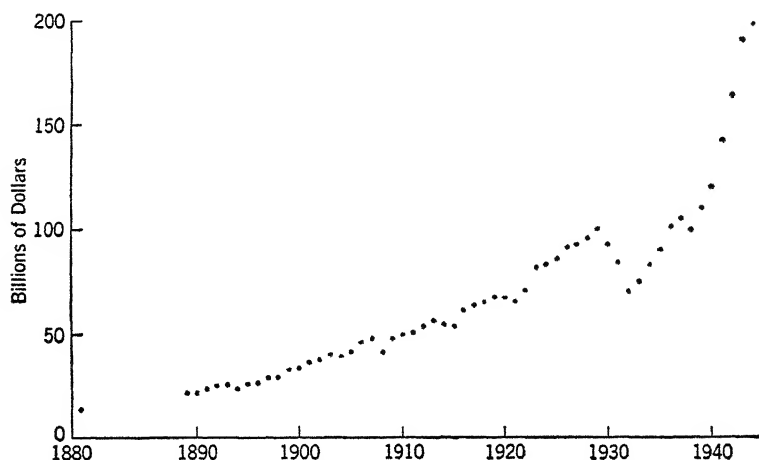


Chart 1. Gross national product 1879–1944 in 1944 prices. (Source: Senate Committee Print No. 4, 79th Congress, 1st session.)

be the result of fluctuations in physical output rather than of fluctuations in prices. This is equivalent to taking the physical outputs of a series of years prior to 1944, for instance, and finding out what they would bring if they were sold at 1944 prices. Any difference between the totals for the different years would then be due to changes in the physical production rather than to changes in prices. Chart I shows the gross national product for the period 1879 to 1947 computed in terms of 1944 prices.

The amount of goods produced in 1879 would have brought only \$15 billion if it had been sold at the prices that existed in 1944. Comparisons such as this between periods that are highly dissimilar should be made with caution. They lack a considerable amount of validity, since many types of goods produced in 1879 were no longer produced in 1944, and similarly many new products were produced in 1944 that did not exist in 1879. In spite of these difficulties, however, the gross

national product figures in constant prices do have some meaning. If anything, the gross national product series understates the growth that has taken place in production. Most of the products that have passed from the market have done so because superior or cheaper commodities have replaced them, and in many fields there has been a steady improvement in the quality or design of the products, which does not show up in the statistical data.

No estimates exist for gross national product prior to 1879. Even if there had been no increase in productivity from 1790 to 1879, however, the population data indicate that gross national product in 1790 could not have been much over one billion dollars.<sup>1</sup> If the goods and services produced in 1790 were sold on the market today, they would not bring a sufficient amount to keep today's population in cigarette money.

INCREASE IN PRODUCTIVITY—GROSS NATIONAL PRODUCT PER CAPITA. Much of the increase in output has been due to the huge growth in the size of the labor force; but even when the gross national product estimates are reduced to a per capita basis (Chart 2), the growth that appears in productivity is very great.<sup>2</sup>

Chart 2 shows that output per capita has more than doubled since 1879, but these aggregate figures conceal a great many dissimilarities between the periods. In 1879 the automobile, airplane, electricity, and telephone were all unknown. Consumers did not have the advantages of many modern appliances, but on the other hand the pattern of living in this period did not require so many. For example, the facilities for rapid and convenient transportation did not exist, but the need for them was not so great as it is now. People did not live at great distances from their jobs and commute to work every day. Cities were not so crowded that people were forced to live in the

<sup>1</sup> Output in 1790 was composed primarily of agricultural products, and for this reason the total is reasonably comparable to later figures. Although the change in quality of agricultural goods produced has been significant, it has been nowhere near so great as the change in quality and type of manufactured goods. If allowance were made for the change in the quality of agricultural produce, the figure for 1790 would necessarily be even smaller.

<sup>2</sup> Per capita figures are used rather than per worker figures, since the latter are not available for early years. For the years for which both are available there is no very marked difference in the relative change shown by gross national product per capita and gross national product per worker.

suburbs in order to have a house and a yard. A great many modern developments simply represent the attempt by civilization to keep up with the increasing requirements that accompany growth and change in society. For this reason even if it were possible to evaluate the net increase in the amount of goods provided to each person in the country, it would still be impossible to draw any conclusion as to the welfare of the economy as a whole. Furthermore, welfare is to a large

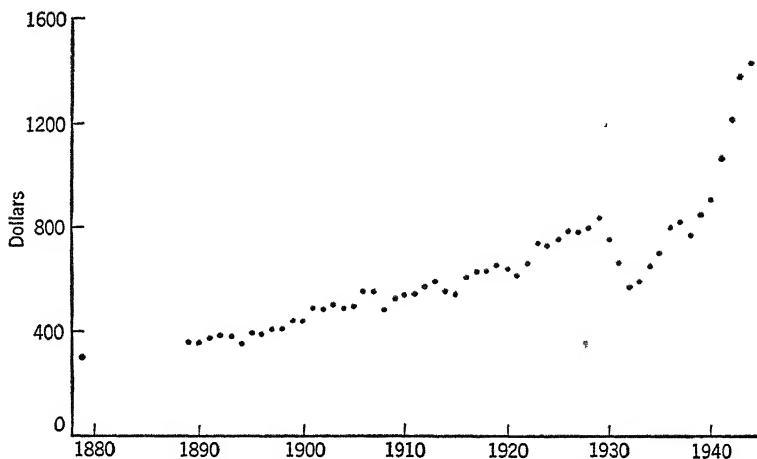


Chart 2. Gross national product per capita 1879-1944 in 1944 prices. (Source: Senate Committee Print No. 4, 79th Congress, 1st session.)

extent a relative rather than an absolute matter. Much of the consumption in the economy is carried out on a competitive basis by individuals attempting to live according to the standards set up by particular classes of society. As production increases, these standards also increase, so that the same relative position in society requires a higher standard of consumption.

### Patterns of Growth in Production

Charts 1 and 2 reflect the general growth of the economy, but it would be misleading to apply the patterns shown in these charts to specific sectors of the economy. The sectors of the economy differ greatly in their growth patterns, and the differences have not been due to happenstance. There is very great significance in the way the growth patterns have been shaped by the economic and social forces in the nation.

**AGRICULTURE.** In 1790 probably over 90 per cent of the labor force was engaged in agriculture. Since that time there has been a gradual change, so that today less than 20 per cent of the labor force is agricultural. One of the major reasons for this decrease is that as a nation becomes more productive, its energies are released into fields other than that of food production. When people have more income to spend, they spend a smaller percentage of it on food and a larger percentage on such things as consumer durable goods, personal services, travel, and amusements. The amount of agricultural employment is thus dependent in large part on the change in the pattern of consumers' wants as their income increases; but this is not the sole force that determines the amount of employment in agriculture. The increase in productivity due to the use of farm machinery and better methods of crop cultivation and livestock breeding has also been extremely important. It has had an effect such that the amount of agricultural production has doubled in the last fifty years without any appreciable change in the number employed in agriculture.

**MANUFACTURING.** Probably the most spectacular increase in output is that shown by the manufacturing industries. The output of manufactured goods in 1790 was so very small that any comparison in relative terms with present production would have virtually no meaning, but a comparison of present production with that of 1900 is very revealing. Output of manufacturing industries in 1947 was over 600 per cent of that in 1900. To a very large extent the economy's growth since the beginning of this century has centered around manufacturing. The very large increases in productivity in manufacturing, due to improvements in technology and to mass production, have been sufficient to yield increases in output far in excess of the increase in employment. Despite the relatively much greater increase in manufacturing output than in other types of output, the proportion of the labor force engaged in manufacturing has increased only from 22 per cent in 1900 to 26 per cent in 1947. Manufacturing employment thus has by no means absorbed all of the increase in the working population that has occurred in this period.

**TRADE AND SERVICE INDUSTRIES.** The transportation, public utility, trade, finance, and service industries have been the sectors of the economy that have absorbed most of the increase in the labor force.

Since 1900 the proportion of the labor force employed by these industries has expanded from about one-third of the total to over half of the total; the actual number employed in these industries has risen to 300 per cent of those employed in them in 1900. The reasons for this increase are twofold: (1) The large increase in the physical size and population of the country and the growth of manufacturing output have greatly increased the demand for employment in transportation, public utilities, trade, and finance. The separation of the producer from the market has called for an elaborate and complex mechanism of transportation and distribution. (2) Consumer preferences have been channeled into the personal service and amusement industries by the continued rise in consumer income. The actual increase in output resulting from the increase in employment in these industries is somewhat indeterminate, since productivity in many of these fields is difficult to measure. Government, personal, or retail services cannot be measured in quantitative terms, so that actual output per man-hour cannot be computed. Domestic servants, for instance, may be much more efficient today because of their increased education and because of the availability of household appliances, but no productivity measurement could show this difference.

CONSTRUCTION. Not all the major sectors of the economy have shown such great increases in output over the last 100 years as are exhibited by those sectors discussed so far. The index of the physical volume of construction shown in Chart 3, for example, indicates that although there have been violent changes in the amount of construction activity in the United States, there has been no outstanding pattern of growth. At times the construction industry has absorbed as much as 10 per cent of the labor force, but at other times it has been of negligible importance.

The forces that operate upon this industry have been subject to considerable change over the period under consideration. As long as the territory of the United States was expanding, construction was called upon to build a civilization along the railway arteries that were being pushed through the west. Cities had to be built where there were none before, and the vast increases in population had to be housed. In more recent years many of the forces that sustained the construction industry in the last century have declined, but in their

stead new forces have developed. With the increase in consumer income the demand for new and modern homes is at a high level. Both government and business building are carried out on a grander scale than they were in the past. The fall in demand for construction due to the end of territorial expansion and population growth has been compensated for by the increase in the demand for construction due to the greater size and wealth of the economy.

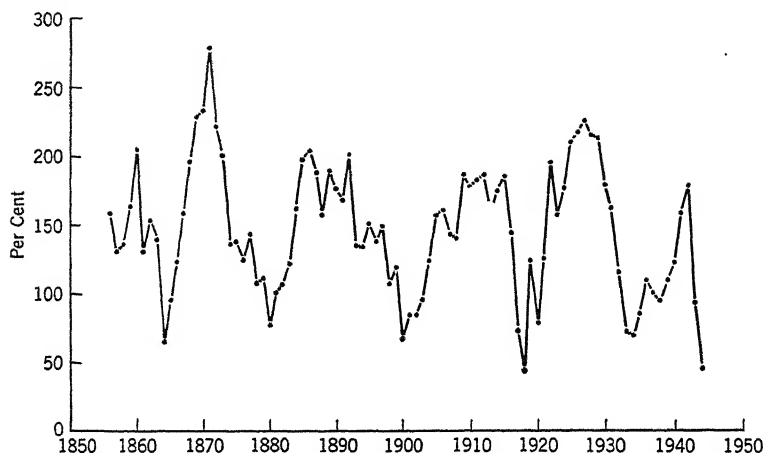


Chart 3. Index of the physical volume of construction 1856-1944. 1935-1939 = 100.

Note: Since the first printing of this book, it has been brought to the author's attention that the long-term movements of this index are not consistent with data on employment in the construction industry. For this reason the lack of trend shown in the chart is of questionable validity. (Source: *Senate Committee Print No. 4, 79th Congress, 1st session.*)

In summary, the growth patterns of the various sectors of the economy have been dictated by the change in consumers' needs and preferences as their incomes have increased, together with the increased complexity resulting from the growth in population and productivity. Future growth need not conform to the pattern of past growth, since different forces will be at work and the conditions that exist in the economy will be entirely different. To forecast the direction of future growth it would be necessary to study the causal elements that exist at the present time and may exist in the future. Simply extrapolating apparent trends cannot produce a valid forecast; when causal relations cannot be determined, it must be realized that any accurate prediction of future development is impossible.

## CHANGES IN THE LEVEL OF ECONOMIC ACTIVITY, 1929 TO 1947

The process of change described above was evolutionary in that it dealt with the long-run development of the economy. The economy is also subject to short-run changes in the level of its activity. It would be possible to select many periods in the history of the United States economy to illustrate this type of change, but in many ways it is best illustrated by the course of events from 1929 to 1947.

**The Level of Employment**

One of the best indicators of the level of activity in the economy in the short run is the percentage of the population that is employed. Over a longer period of time this measure will not reveal a great deal about the level of activity of the economy, since it is greatly altered by such long-run factors as change in the age distribution of the population, change in the groups in the economy normally entering the labor force, and changes in the concept of employment. A growing population will have a greater proportion of people in the younger age groups than will a declining population, so that a different percentage of the population will be available for employment. Furthermore, as the country has grown in wealth and life expectancy has increased, the groups in the population normally seeking employment have been greatly changed. In the early years of the United States children were employed in factories and on the farm at a much earlier age than they are now, and individuals did not so frequently survive to retirement age. Finally, the very definition of employment itself has caused apparent changes in the proportion of the population that is employed. Housewives, for example, are not considered part of the employed labor force, so that when they hire someone else to do their housework and take jobs in industry, the apparent result is that more people are employed although actually there may have been only a shifting of tasks among people. Keeping all these conditions in mind, it is still useful to examine the proportion of the population employed as an indication of the level of economic activity *in the short run*. Chart 4 shows how this proportion changed during the period 1929 to 1947.

In the year 1929 about 47 million people were employed; this constituted about 38 per cent of the population. There was some unem-

ployment (about 1.5 million) due to normal labor turnover, but the economy was in general considered to be at "full employment." The unemployment that did exist was frictional: for most unemployed individuals it was purely temporary and was due to changing jobs rather than to inability to find jobs. By 1932 and 1933, however, over 12 million people were out of work and were seeking employment. This unemployment was not frictional, since enough jobs did not exist to employ the number of people who wished to work. The percentage



Chart 4. Percentage of the population employed 1929-1945. (Source: Senate Committee Print No. 4, 79th Congress, 1st session; Census Bureau.)

of the population employed dropped to 30 per cent. It did not get back to the 1929 level until 1941. The chart shows that the recovery from the depths of the depression was very slow, and the recession of 1938 appears very distinctly as a drop in the percentage of the population employed. In the year 1944 employment reached an all-time peak of 65 million (almost 30 million above the depression level); this represented over 47 per cent of the population. Even at this time it is estimated that there was frictional unemployment of about 0.7 million. However, the extraordinary demand for labor in this period drew into employment a great many people who would not have been working in normal times. Housewives took jobs in business and industry, older people who normally would have retired postponed their retirement, and boys and girls postponed the completion of their education to enter the labor force or the armed services.

In both 1929 and 1944 unemployment was reduced to a minimum frictional amount, so that from the point of view of those seeking work



the economy could be said to be operating at full employment. But this term is somewhat misleading, in that it can be applied to very different situations. The level of economic activity in these two periods was very different; and as will be shown below, in economic terms the situations were not strictly comparable.

### **Changes in the Level of Output**

Coincident with changes in employment, there are usually accompanying changes in the level of output in the economy. The pattern of output from 1929 to 1947 has already been shown in Chart 1 of this chapter; the fall in employment during the depression of the thirties was accompanied by a fall in output of 30 per cent. From the depths of the depression output rose so that in 1945 it was 300 per cent of what it was in 1932.

A change in the level of output in an economy does not necessarily mean that there has been a corresponding change in the general level of activity. As productivity increases, more output can be produced with the same amount of activity. It has been pointed out in the earlier part of this chapter that changes in population and in productivity have had profound effects upon the economy. The action of these forces is by no means absent from the workings of the economy over a short period, but the effects of the long-run evolutionary changes cannot be separated from the effects of the short-run changes in the level of activity, since each influences and alters the other in the highly complex mechanism of the economy. Despite the fact that they cannot be isolated, however, both types of forces do exist.

In other words, it is not possible to say what output would have been in 1940 if there had been no depression in the preceding period. If there had been no previous depression, many changes would have taken place and the economy in 1940 would have been quite different, but it is a matter of conjecture just how it would have been different. And from the other point of view the long-run changes in population and productivity that were in the process of taking place undoubtedly had some effect on the level of activity in the depression, but it is impossible to say what the level of activity would have been if these forces had been absent or had been of a different type. The evolutionary change of the economy and the fluctuations in the level of economic activity are so completely intermingled and interact with each

other in such a way that it is not possible to look back over a period and separate the influence of each type of change.

In the short run, nevertheless, output is highly related to the level of economic activity, and employment and output are closely linked. During the depression of the thirties people were unemployed and so obtained less income; as a counterpart to this on the production side, less was produced and sold to consumers. A large segment of the labor force sat idle in dire need of the goods that they could have produced had they been employed. From a technical point of view there was no bar to production. Both manpower and industrial capacity were present—yet the economic mechanism was unable to bring together the ability to produce and the need for the product. To a very large extent the analysis developed in Part Two of this book is centered around this paradox of scarcity and plenty. Study of the economic mechanism in more detail will demonstrate how such a condition can exist.

### **Price Changes in the Economy**

Every good or service produced in the economy can be thought of in terms of a price and a quantity, and almost all transactions have a price element in them. The wage rate is the price of labor, railway fare is the price of rail transportation, and the interest rate is the price of borrowing money. The prices of one producer often become the costs of another producer—as, for instance, when a lumber dealer sells lumber to a contractor or a farmer sells grain to a miller. These transactions among producers create a structure of price-cost relationships that are very important in explaining how a reaction takes place in the economy. Prices are most commonly used in connection with actual finished products that appear on the market; it is often assumed that these finished good prices reflect the prices of the labor, transportation, interest, etc., that have gone into them, so that a study of commodity prices will give a true picture of the level of prices in the economy. This view is very much oversimplified, since it does not take into account the relationship of prices to each other, but for some purposes it is useful to show how a given group of commodity prices have changed.

An average picture of how prices in the economy have changed can

be obtained by a method similar to that employed in showing how on the average the quantity of output has changed. Gross national product in constant prices was used to show the changes in the quantity of output; similarly, it is possible to get some idea of how prices on the average have changed by taking a constant amount of goods and finding their value in terms of the prices of different years. For example, goods that would have cost \$1,000 if bought at the prices prevailing in one year might cost \$1,500 if bought in another year. Under



Chart 5. Index of consumers' prices 1929-1947. 1935-1939 = 100. (Source: Bureau of Labor Statistics.)

these circumstances the average price of these goods can be considered to have increased by 50 per cent between the two years. Chart 5 shows such a price index for consumer goods for the period 1929 to 1947.

With the decline in the activity of the economy from 1929 to 1933 prices of consumer goods on the average fell about 25 per cent. After 1933 they rose slowly until the recession of 1938. In the early part of the war prices rose fairly sharply, but with the advent of price control the rise was slowed down. After the removal of price control, prices again rose sharply.

In an uncontrolled economy prices are highly related to the level of economic activity. They are not merely a resultant of the forces operating within the system; they are an active part of the mechanism that determines the level of activity. Any study of that level, therefore, must of necessity analyze the function of prices in the system.

PRICES AND INCOME. Income in the economy is, as has been pointed out above, in large part dependent on prices. The wage rate of employees is the price at which they are selling their labor, and the amount of their income depends solely upon this wage rate and the amount of labor they perform. In this sense income is the result of the price of labor and the amount of employment and reflects in one magnitude the total effect of these two elements. Similarly, the prices of agricultural goods in conjunction with the amount produced and farm costs determine the income of the farmer, and the prices of manufactured goods in conjunction with the volume of output and manufacturing costs determine manufacturing profits. All income in the economy follows directly from the patterns of prices and output. There can be no change in either prices or output without someone's income being changed.

Income is very greatly dependent on the level of activity in the economy. The laborer who is unemployed does not get any income, and even those who are employed get less when the wage rate declines. The farmer receives less when the prices of agricultural goods fall, and the manufacturer makes no profit if he cannot produce at a cost less than the price for which he can sell his product. Gross national product in current prices—the gross income of the nation—varies greatly as the level of economic activity changes. The drop in gross national product (Chart 6) from 1929 to 1933 was about 45 per cent. By 1947 it had risen again, to 400 per cent of the depression level.

Part of the variation in gross national product over the period from 1929 to 1947 was undoubtedly due to basic changes that were taking place in economic institutions, population, and technology, but these elements alone cannot explain all the changes that took place. The fluctuations in gross national product are a reflection of the changes in prices, output, and employment that have taken place within the framework of the economic mechanism. In order to understand these fluctuations it is necessary to analyze the process by which a change in the level of gross national product comes about in terms of prices, output, and employment. The income of the nation is the resultant of these elements; an understanding of the place of each of them in the mechanism that determines the level of income is essential to an adequate explanation of the process of change in the economy.

**PRICES AND PURCHASING POWER.** The income of individuals in the economy is to a very large extent used to purchase consumer goods and services. The prices of these commodities determine how much of them can be bought with a given amount of income. It is quite possible, for example, that even during a period of rising incomes the amount of consumer goods that can be purchased may decline if



Chart 6. Gross national product 1929–1947 in current prices. (Source: Department of Commerce, National Income Division.)

prices are rising faster than incomes. Prices, output, and incomes are so linked that if output remains the same and income increases, prices must rise equivalently so that the amount of goods that can be bought will remain the same. The previous section pointed out the linkage of prices and output with income from the point of view of the determination of payments of income; the linkage here is from the point of view of the purchase of goods—the demand for output. The level of prices not only influences the amount of income in the economy; it also has a very strong effect upon the quantity of output that can be purchased.

Prices thus perform a dual function in the economic mechanism. On the one hand, together with output and employment they determine

incomes in the economy. On the other hand, together with income they determine purchasing power and so provide a link between incomes and outputs. Behind the level of economic activity reflected in the national income accounts there is thus a system of interrelated prices, outputs, and employment, which by their repercussions, both to external changes and to changes within the system, produce the fluctuations in the level of economic activity. The study of changes in the level of economic activity is thus the study of prices, output, and employment in the short run or, more briefly, the study of income and employment.

### **Patterns of Changes in Prices, Output, and Employment**

The previous sections have attempted to show that violent changes in prices, output, and employment occur over relatively short periods of time, and for this purpose general statistics have been given that refer to the economy as a whole. These statistics do not reveal the extent to which various parts of the economy differ from each other. Agriculture and manufacturing, for instance, react quite differently to the change in the level of economic activity, and these reactions, in turn, have a further effect upon the economy.

AGRICULTURAL PRICES, OUTPUT, AND EMPLOYMENT, 1929 TO 1947. The position of the farmer in the economy is quite different from that of other producers. The actual outlay of money costs in agriculture is usually a small percentage of the total market value of the commodities produced, and the major portion of the cash return goes to pay the farmer for the labor he has expended in production. This situation is quite different from that of the manufacturer, who makes large expenditures for materials and labor and receives as his return the margin that exists between these costs and the selling price. Agricultural output will not be curtailed when the price of the commodities produced drops sharply. As long as the farmer gets some return for his labor, he will prefer to produce for whatever he can get rather than sit idle and get nothing. In almost all instances the point of maximum return for the individual farmer will be the largest amount he can produce irrespective, within very broad limits, of price. This phenomenon is clearly shown in Chart 7, which shows prices, output, and employment for agriculture in terms of index numbers. The fluctuations in prices are very marked, but the changes in employment

are not very great. Output increased considerably during the war period, but this increase is due to increased productivity per worker rather than to any increase in employment. Employment and output in agriculture are not affected to any very great degree by the level of activity of the economy. As a result, when individuals in the economy have less income and the demand for agricultural products de-

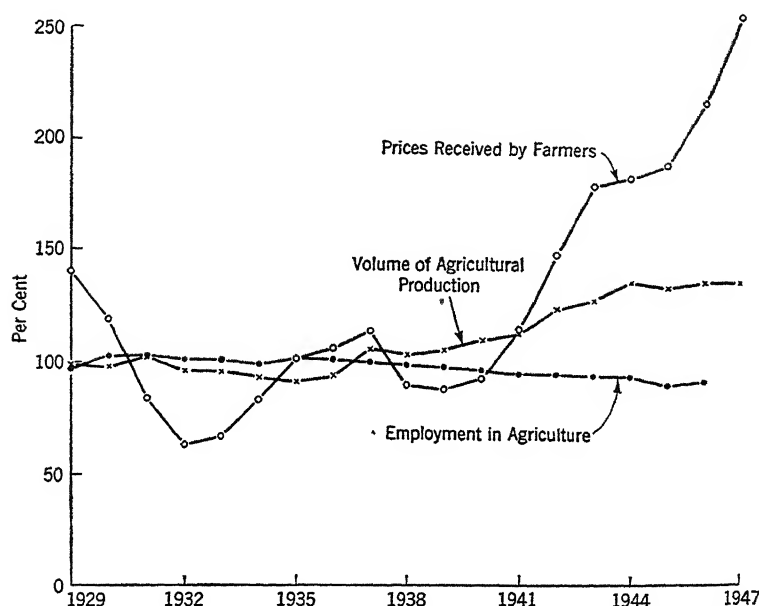


Chart 7. Prices, output, and employment in agriculture 1929-1947. 1935-1939 = 100. (Source: Bureau of Agricultural Economics and Census Bureau.)

clines, prices must bear the brunt. Although there is less income to buy farm products, about the same quantity of such products is produced and sold. Their price must therefore fall correspondingly, so that the same quantities can be bought with the lowered level of income. Correspondingly, when incomes increase, there is a rise in demand for agricultural goods that may be greater than the increase in output due to productivity increases. When this happens, prices must rise so that the increased amount of money available for purchase of agricultural products will equal the amount of agricultural goods available for purchase. Increases and decreases in the demand for agricultural products caused by changes in the level of activity of the

economy are thus translated almost entirely into price changes, and employment and output are relatively unaffected.

MANUFACTURING PRICES, OUTPUT, AND EMPLOYMENT, 1929 TO 1947. The pattern of prices, output, and employment for the manufacturing sector of the economy is very different from that for agriculture. The manufacturer must pay for the cost of wages and materials from the



Chart 8. Prices, output, and employment in manufacturing 1929-1947. 1935-1939 = 100. (Source: Bureau of Labor Statistics, Federal Reserve Board, and Census Bureau.)

proceeds of the sale of his product. When demand for the product falls, the producer frequently finds that he would lose money if he were to keep on producing at the same level. The cost of the labor and materials might well exceed the total amount for which the final product could be sold were production to be maintained. A price will therefore exist below which the producer will not be willing to sell, and he will not produce more than will be bought at this price. A decline in activity (and incomes) in the economy leading to a fall in the demand for manufactured products will thus be translated partly into a decline in price and partly into a decline in output. Chart 8



shows the pattern of prices, output, and employment for the manufacturing sector of the economy. The change in output and employment is very much greater than the changes of prices. The effect of increasing productivity can be seen in the much greater rise in output than in employment after the depression. It should be noted, however, that the index of employment does not accurately reflect the true decline and increase in the amount of labor used in the economy. During the depression, many men were employed on a part-time basis, whereas during the war not only were people fully employed but a great deal of overtime work was put in. For this reason the actual amount of labor utilized by the manufacturing industries fluctuated more than the employment index indicates.

### **The Interrelation among Industries in the Economy**

Just as differences exist between agriculture and manufacturing in the pattern of their reactions to changes in the level of activity in the economy, so also within these industries and in other industries, such as trade and service, still different patterns result from the institutional organization of the economy. Public utilities and railroads, for example, behave differently from either the farmer or the manufacturer because of the problems involved in rate making and the existence of many different markets for their services. The corner grocery store may have a great deal in common with the farmer in that the proprietor has no employees beside himself so that employment cannot change, but on the other hand changes in the cost of the goods sold may sometimes render infeasible the maintenance of a constant volume of sales.

No matter how differently the various sectors of the economy may react, however, it should not be forgotten that all the sectors are interrelated and form a part of one unified economic system. The wage earner in manufacturing purchases the agricultural goods produced by the farmer. The manufacturers themselves purchase agricultural goods as raw materials to use in their production. The farmers' income, derived from these purchases, is in turn spent on goods produced by the manufacturers and sold by the retailers. During a depression when prices of farm products fall greatly, wage earners need to spend less on food and so have more money left to spend on manufactured products. On the other hand, the fall in farm income means that farmers'

ability to buy manufactured products is sharply curtailed. It is sufficient here to point out that these interrelationships do exist and should be kept in mind. Their importance and meaning can be evaluated only within a relevant framework of analysis. It is to the function of such a framework of analysis that attention shall now be directed.

#### THE MEANING AND FUNCTION OF INCOME ANALYSIS

The preceding section has served to point out that an economy may have short-run changes in the level of its activity fully as well as changes of a more evolutionary nature. Separation of the two types of changes is neither possible nor desirable; nevertheless, the illustration of these two aspects of change serves to show the setting of the problem of income analysis and helps to indicate what its role is conceived to be.

#### **Income Analysis as Related to National Income Concepts**

The term "income analysis" was used before the variety of national income concepts had been developed. It referred to the development of a theory relating the income of the economy to the level of economic activity. With the development of the national income concepts this theory has become an analysis of the process and mechanism by which the gross national product (or national income) changes level in the economy. Alternatively such a theory has been called "income and employment theory" or the "theory of prices, output, and employment." All these titles serve to accent one fact: The elements to be analyzed are those which are implicitly contained in the national income concepts. Gross national product, for example, can be represented both by the market value of current output and by the allocations of such market value; implicit in both of these aspects are the prices, output, and employment of the economy. At different levels of economic activity, both the level of gross national product and the interrelation among the various elements in the economic system will be different. Income analysis attempts to describe the mechanism by which the gross national product changes with changes in economic activity and the way in which this mechanism, in turn, reacts on the level of activity.

### **The Relation between Income Analysis and the Causes of Changes in the Level of Economic Activity**

Income analysis does *not* attempt to ascertain why a change in economic activity has taken place. During the period from 1942 to 1945, for instance, the level of activity in the economy changed primarily because of production for war purposes. But as far as income analysis is concerned, this knowledge of the underlying cause for the increased activity does not afford the desired answer. Questions still remain as to how the increased activity came about, how it affected the various elements in the economy, and how the level of increased activity was shaped by the economic mechanism. The problem of income analysis is one of explaining the operation of the mechanism of the economy rather than one of digging back to find the basic causes. There are many explanations of the causes of the depression of the thirties. Income analysis does not attempt to explain these causes, but rather it explains the process by which the economy went further into the depression and the way in which it recovered. The study of the causes of booms and depressions belongs to the field of business cycle theory, not to income analysis. This separation of business cycle theory from income analysis is useful, since the former is controversial and speculative whereas the latter is confined to the mechanistic aspects of the economic system about which economists in general are in agreement.

### **The Importance of Income Analysis**

Analysis of the mechanism of economic change is important because of the well-recognized fact that any change in the level of activity, once started, may become cumulative. Income analysis would not be of very great importance if the economy were at all times entirely controlled by forces independent of itself. But this is far from being true; the economic mechanism may reinforce or limit the effects of any changes due to independent forces. Income analysis focuses attention on the nature of the economic mechanism and the role that this mechanism plays in the change in the level of economic activity; it is useful because it produces an understanding of how the economy operates. Such an understanding is essential if the implications of proposed policies are to be clear and if contradictory measures are not to be undertaken.

## 8. The United States Economy in Operation, 1929 to 1947

Before an attempt is made to introduce income analysis as a theoretical system, some consideration of what has taken place in the economy over the past twenty years will be useful. This presentation will not be a weighty consideration of all the detailed workings and ramifications of the economic system but rather will try to paint in broad outline the history of the economy over the period. Furthermore, accent will not be laid on why things happened but instead on how they happened. By using such an approach this chapter will provide a background for the theoretical structure that will be given in the following chapters and at the same time will give empirical substance to the theory. Most of the material presented here is purely of a descriptive nature; for that reason it will have relevance after as well as before the presentation of income theory.

### THE UNITED STATES ECONOMY IN THE TWENTIES

#### **The Pattern of Economic Change**

Many of the changes that took place in the economy after World War I graphically portrayed the nature of the evolutionary forces that were at work. Almost all sectors of the economy moved forward with improved technology and increased productivity. The people of the nation felt that the new era had dawned and that the future held only continued advances in wealth and abundance. The times were progressive, in the sense that they were forward-looking and were willing to permit the forces of change and innovation to take hold. But reform was not carried out by correcting basic elements in the

system; rather, the principles of "soundness" and mercifulness were followed. The nation was self-confident and felt that its growing wealth was justly due it. Harding, Coolidge, and Hoover all served their terms in quick succession—all assuring business that the government was its guardian and servant. Such a picture, however, does not adequately portray the course of economic development. The growth of the nation was not simply a general increase in everything; subtle changes were occurring, such that by 1929 the economy was strikingly different from that which existed in 1920.

AGRICULTURE. Not all sectors of the economy responded to the new technology and increased productivity in a way that benefited those who worked in the industry. In agriculture the use of farm machinery, new fertilizers, and improved grains and stock had been increasing for some time, but this process had not brought prosperity to the farmer. Ever since 1910 the movement of people from the farm to the city had been reducing the actual number of farmers, yet the smaller number of farmers had produced more agricultural goods than ever before. The cry of oversupply was raised, since consumers were not willing to purchase this larger amount of agricultural products unless the prices fell. Certainly from the consumers' point of view there were not too many agricultural goods; they were very happy to pay the lower prices and get more for their money. But from the farmers' point of view the situation was far from satisfactory; in comparison with industrial workers the farmers were underpaid for their efforts. Many farmers would have been more productive to society—and would have received higher incomes—had they been employed in other industries. The economy could use all the agricultural goods produced, but consumers would have preferred to have the resources used in producing these goods employed in other ways. Although consumers welcomed the lower prices and greater quantities of food, they would have welcomed lower prices and greater quantities of other goods even more. The depressed earnings of the farmers were not due to an actual oversupply of agricultural products but rather to a misallocation of the available resources of the country.

The shift of people away from agriculture did not provide very much relief to those remaining in the industry, since it was not rapid enough to keep pace with the increasing productivity. The amount supplied increased faster than the amount wanted at the going prices,

so that prices had to fall. World War I, furthermore, delayed adjustment in agriculture by creating an abnormally high demand for its products, which increased the standard of living of farmers during the war period and shortly thereafter. After this abnormal demand had vanished, a substantial number of farmers who normally would have left the industry still remained in it—and the share of each was thereby made smaller than ever. The only satisfactory solution to the problem lay in an exodus of people from agriculture, but adjustment of this nature was difficult. People clung tenaciously to their past ways and endured hardship rather than take jobs in industry or business. As a result agriculture remained on the whole unprofitable for those employed in it, in spite of the improving technology and productivity.

**MANUFACTURING.** In manufacturing, the changes in technology and productivity had different repercussions. These repercussions were strikingly illustrated by the automobile industry, where new improvements were introduced in quick succession and output per man-hour rose by 40 per cent between 1923 and 1929. When allowance is made for the improved quality of the automobiles, production in this industry rose by 70 per cent, with the use of only 25 per cent more labor over this same period. The workers in the automobile industry did not benefit directly from the increased productivity; their average hourly earnings in money terms did not rise appreciably. Rather, with the fall in costs due to greater productivity, the manufacturers increased the quality of the product and reduced prices. The continued prosperity of the economy was reflected by the willingness of consumers to spend more and more money on automobiles, so that despite the huge increase in output the demand for automobiles was not satiated.

Other manufacturing industries, though differing in detail, behaved in general quite similarly to the automobile industry. Employment increased slightly (less than 10 per cent), but the increase in productivity was such that output went up by about 30 per cent. The wage rate increased somewhat, but the major effect of this increased productivity was the gradual reduction of prices. The prosperity existed side by side with falling prices due to the increased productivity of the industries. The benefits were partly passed on to the workers in the form of new products and somewhat lower prices but not to any large extent in the form of increased wages.

TRADE AND SERVICES. Under the impact of the increased productivity and output of agriculture and manufacturing other profound changes took place in the economy. There was a very considerable growth in the number of white-collar workers. With the huge increase in the amount of goods available the economy permitted and the increased output perhaps necessitated a very large increase in the distributive trades. Between 1920 and 1930 sales forces almost doubled; this was due partly to an increase in the number of stores and partly to the increased size of stores. The professional and clerical white-collar groups also increased rapidly. More teachers, lawyers, engineers, and nurses were trained. Business hired more bookkeepers, secretaries, and cashiers. To a very large extent the white-collar classes absorbed the population increase and contributed their services to the increasing output of the nation.

It is interesting to speculate about the origins of these new classes and how they developed in the economic system. Many of the new services—distribution, packaging, advertising, etc.—were made possible without causing either an increase in prices or a lowering of earnings, because increased productivity had caused a sharp decrease in other costs of producers. Others of the services provided by these groups were rendered to the increasing number of higher income families; the number of domestic servants doubled, and there were extraordinarily large increases in the number of restaurants, laundries, insurance agents, and stockbrokers. America was coming of age.

### **Short-run Changes in the Twenties**

In addition to the evolutionary changes that were taking place in the economy during the twenties, there were other changes that, though of a more short-run character, were nevertheless a very important part of the picture of the times. During World War I and immediately following it a sharp price inflation occurred. Prices in 1919 were almost double what they had been in 1914, and in 1920 they were driven even higher by people who expected even more price increases and attempted to increase their stocks of goods. The end to this process came in 1921, when prices fell and activity declined simultaneously. Prices dropped almost 50 per cent, and manufacturing output contracted 30 per cent. The recession was short, however, and within a year output was back at its former level. The net effect

of the fluctuation was only the readjustment of prices. After 1922 the period was one of prosperity; the slight fluctuations in activity in 1925 and 1927 went almost unnoticed. In agriculture weather conditions and world markets continued to vary the fortunes of farmers. Abundant crops forced the price of agricultural goods so low that there was hardship in the midst of plenty, and scarce crops sent it up again.

In the light of the changed nature of the economy the business sphere also took on new aspects during the twenties. The continued growth of corporations and holding companies created an intricate network of financial structures. In retrospect the stock-market dealings seem best to typify the spirit of the times. Except for the depression of 1921 the stock market moved continually upward throughout the period. To the vast majority of investors the purchase of securities was only partially a gamble. The problem seemed to be not one of choosing stocks that would go up; instead it was one of choosing those which would go up most. Over this period almost all purchasers of securities gained; this gain was attributed at the time to the natural growth of the economic system. It is difficult to assess the importance of the stock market in the economy. During the boom economists and businessmen alike ascribed the rise in stock prices to the sound progress that the industrial firms were making in the economy. After the crash in 1929 the same people claimed that the depressed level of the stock market had little to do with the functioning of the economy. In all probability, this last analysis is the more correct of the two. The stock-market phenomenon was an outgrowth of the period, but it was not necessarily a part of the basic evolution of the system. The dominant influences in the twenties were those forces which changed the nature of the economy; by 1929 the economic system of the United States was very different from what it had been ten years earlier.

### THE DESCENT INTO DEPRESSION: 1930 TO 1932

#### **The Process of Decline**

Few signs existed in the first part of 1929 to indicate that the economy was on the brink of a disastrous depression. Manufacturing production had been rising fairly steadily throughout 1928 and early 1929.



In the second half of 1929, however, distinct signs of the setting in of a decline appeared: From June to December there was a 20 per cent decline in the output of manufacturing industries, and in October the greatest stock-market crash in history occurred.

**THE ORIGINAL IMPETUS.** It is not the purpose of this description to suggest a cause for the initial decline that set off the depression. There are a great many conflicting explanations of the basic causes of the depression, but there is general agreement as to the course followed by the decline. The fall in manufacturing output was a reflection of the decline in purchases from manufacturers. In large part, manufacturers produce according to the orders that they receive from distributors. When jobbers, wholesalers, and retailers reduce their purchases, the manufacturer, afraid of being overstocked with output that is not in demand, curtails the level of his production to the amount that can be sold. The jobbers, wholesalers, and retailers, in turn, try to act as middlemen between the producers and the final purchasers. If the final purchasers stop buying a product, the jobbers, wholesalers, and retailers will stop ordering it for fear of an oversupply of goods that do not sell. With a fall of goods purchased fewer goods will be needed to replenish stocks, so that orders will be smaller. When a distributor looks forward to an additional decline in sales, furthermore, he may decide actually to reduce the volume of his stock in the expectation of a fall in prices.

The decline in manufacturing output thus reflects the decline in the amount of goods removed from the markets by the final purchasers. Final purchasers have already been defined in the discussion on national income; they are (1) consumers, (2) purchasers of producers' durable equipment and construction, (3) foreign purchasers, and (4) Federal, state, and local governments. These are the groups who purchase goods from the market. A change in the amount they purchase is capable of having repercussions on the level of output in the economy. It does not follow from this, however, that observing the amount of goods which each of these groups purchases will indicate what caused the initial decline. All these groups, with the possible exception of the government purchasers, are highly sensitive to changes in the level of activity in the economy. The change in the amount each purchases might be either the cause or the result of the over-all change in level.

THE CUMULATIVE DECLINE. Although the origins of the depression can perhaps not be discovered, the immediate repercussions can be traced. In 1930 purchases contracted. The inventories of manufacturers did not increase so much as they had in 1929, and the inventories of both wholesalers and retailers contracted. The contraction in output was thus greater than the contraction in purchases. Goods did not pile up and so provide a lag between the decline in purchases and the corresponding decline in output; rather, the decline was more than passed on by the decline in inventories.

Production of fewer goods meant that less labor was needed, so pay-rolls were smaller. In 1930 personal income was \$76.2 billion, as contrasted to \$85.1 billion the previous year. Consumers had less money to spend, so consumer expenditures dropped from \$78.8 billion to \$70.8 billion. The contraction of output thus contracted people's income; the cut in income decreased people's expenditures; and this, in turn, was translated into a further cut in output as demand dropped still further. This process obviously is self-perpetuating, in that every decline in output reduces income and expenditures, which, in turn, further reduces the level of output and income. The result was that from \$76.2 billion in 1930 personal income dropped to \$64.8 billion in 1931 and \$49.3 billion in 1932. Consumer expenditures also dropped, but not quite so much; in 1932 consumer expenditures were actually in excess of personal income. Before the depression consumers as a whole had saved almost \$4 billion from their income each year; but as their incomes fell, they were forced to dig into their past savings and spend more than they received. In 1932 they dissaved more than \$1 billion; *i.e.*, they spent this much more than they received. To some extent this dissaving tended to limit the momentum of the downward movement.

Once it became apparent to business that a depression had set in, a further reaction took place. Many producers had been purchasing machinery and equipment to expand their plants or make new products. The decline in all parts of the economy and the lack of purchasing power in the hands of consumers made such expansion ill-advised. The depression was forcing producers to operate at far below their capacity, so additional capacity was unnecessary. Even replacements of machinery and equipment were postponed as much as possible. The construction industry also declined very sharply; businessmen

could not be persuaded to erect new plants, and the market for houses was at a low ebb. The effect of all this was to reduce purchases of investment goods by producers from \$14 billion in 1929 to about \$1 billion in 1932, and as a result both output and employment in these industries were sharply curtailed.

The price declines that took place as production contracted further intensified the movement downward because of their effect on inventories. Producers and distributors are very reluctant to purchase goods in the face of declining prices. Any goods that they hold decrease in value as prices go down, and by postponing purchases as long as possible they can buy their materials and products more cheaply. For this reason demand fell still more and production was cut still further, so that more unemployment resulted and still less consumer income was available.

### **The Nature of the Economy in the Depression**

For three long years economic conditions in the nation grew continually worse—not by gradual degrees, but in a cumulative crash. By 1932 the economy was at a low ebb; unemployment had swelled to 13 million, and gross national product had dropped from the 1929 level of \$103.8 billion to \$58.3 billion. The effects of the depression had penetrated the economy to its core and presented many difficult problems of adjustment that had not existed in 1929.

**FINANCIAL PROBLEMS OF THE ECONOMY.** The crash of the stock market in 1929 had carried with it a wave of bank suspensions, such that in 1931 over 1,500 banks were forced to close their doors. The economy was trying to get into a liquid position, and the only way that such liquidation could occur under the existing system was by a contraction of the huge credit structure which had been built up in the twenties. Bankruptcies and foreclosures were so widespread that it seemed as if the system were to break down into chaos. In order to stem the disastrous effects of this liquidation Hoover's administration in 1932 created the Reconstruction Finance Corporation. This organization had the power to make loans to banks, railroads, farmers, and business. The Federal Reserve System sought ways to make advances to banks that needed liquid funds by enlarging the discount facilities of the Federal reserve banks to include the discounting of commercial paper, which until then had not been eligible. Efforts were made to

forestall foreclosure and forced liquidation of business. Without doubt, the measures that were taken did help the economy to adjust to the contraction and upheaval taking place, but it is not at all evident that these measures did much to prevent the further financial complications of the deflationary process.

**PATTERNS OF DECLINE.** Not all the economy was equally affected by the decline. As has been pointed out, agricultural output did not contract; as a result the prices of agricultural goods collapsed, since consumers no longer had sufficient income to spend the same amount of money on food. Prices of farm products found their new level at the place where price was low enough for the total amount produced to be purchased by consumers with their reduced incomes. At this low level agricultural income was less than half of what it had been in 1929.

Different types of manufacturing responded quite differently. Some industries, such as steel and machine-tool production, were greatly affected by the very sharp decline in the demand for investment goods. The output of steel fell by more than 75 per cent between 1929 and 1932, and the production of machine tools fell by about 85 per cent. Consumer durable goods, similarly, declined sharply, since consumers could postpone their purchases of durable goods much more easily than they could do without food and shelter. Automobile production fell 70 per cent, and clock and watch production fell by 50 per cent. In the nondurable consumer goods industries, two different factors were at work. (1) The goods were very much more necessary than were consumer durable goods. Consumers needed food and clothing more than they needed new automobiles and household appliances. (2) The decline in agricultural raw material prices reduced costs in the nondurable goods industries so that they were in a better position to lower their prices and thereby attract consumer expenditures. The fall in boot and shoe production, for instance, did not exceed 17 per cent during the depression, and the fall in cotton-goods production was about 33 per cent.

The period from 1930 to 1932 thus was one of sharply declining output and employment. It demonstrates very well the manner in which an initial decline in output can produce a cumulative movement downward. The decrease in employment and income that accompanies a curtailment of output will lead to further reductions in output, and

this, in turn, will have its repercussions, so that a continuous series of reactions are set in motion. In addition, the decline in output discourages the purchase of investment goods, and this, in turn, has its repercussions on output and employment. Finally, the price decline, with a prospect of further decline, induces producers and distributors to reduce their holdings of goods and materials to a minimum. The economy attempts to use up goods produced in the past rather than produce currently all that it uses. All these elements help to produce the cumulative movement of the economy. The decline in output generates further declines in output by causing unemployment; once a decisive movement downward is started, the contraction in purchases of investment goods and inventories will further accentuate the decline.

#### THE GRADUAL RECOVERY: 1933 TO 1940

##### **The Turning Point: 1933**

The depression continued into 1933. In many lines of production output declined through the first quarter of this year, but by the latter part of 1933 the path upward had definitely started. By the end of 1933 output and employment in manufacturing had increased by 30 per cent over their lowest level and reached the level at which they had been in mid-1931. Total employment did not increase so fast, and with the growth of the labor force actual unemployment was reduced by only one or two million. Nevertheless, personal income increased from \$43 billion in 1932 to \$50 billion in 1933, so that more money was available for consumers' expenditures. The rise in consumers' income increased the demand for agricultural products, so that there was a substantial rise in their prices. The cumulative process of the upward movement had started.

The exact causes underlying this change in the level of activity cannot be identified, but it should be realized that by this time many of the forces which had been depressing the economy had lost their strength. Primary among these forces was the decline in investment expenditures. The amount of the nation's output that was purchased by producers had dropped from \$15 billion in 1929 to less than \$1 billion in 1932. Producers practically stopped buying machinery and equipment, construction was at a low ebb, and inventories declined. The time came, however, when producers' purchases were so near

zero that they could not decline further and inventories were so low that they could not be reduced any more. When this happened, a very great deflationary force in the economy ceased to exist. Declining investment expenditures could not reduce output further, since, for all practical purposes, investment expenditures had ceased to exist. If total expenditures in the economy were to decline any more, either the expenditures of the government or the expenditures of consumers would have to decline. There had been relatively little change in government expenditures. Consumers' expenditures had declined almost entirely because of the decline in personal income. As the depression became more severe, people used their past savings to maintain to some extent the level of consumer expenditures, and the cumulative movement downward was to some degree slowed down.

Other sources of expenditures had a regenerative influence on the economy in 1933. Producers had postponed all possible expenditures during the period 1930 to 1932, and a point was finally reached when further postponement of maintenance and replacements was not feasible if production was to continue even at the existing low level. During 1933 there were increases in the sales of such producers' durable equipment as mining machinery, metalworking machinery, farm machinery, railroad and transit equipment, and business motor vehicles. In all probability these increased purchases represented necessary maintenance rather than actual improvement in the industry. Other producers' durable equipment continued to decline in 1933. Less construction machinery, electrical apparatus, and office equipment was purchased; these were lines of goods in which maintenance was not so important. Also, by 1933 producers had contracted their inventories to the point beyond which sales could no longer be made from goods on hand. After stocks had been reduced to a minimum, the maintenance of the same volume of sales required an increase in the orders to producers and to sellers of raw materials, so that a definite stimulus to increased activity was provided.

In discussing the turning point of 1933 or for that matter any turning point of activity, it should be kept in mind that many other influences will affect the operations of the economy. The size of agricultural crops, the political climate and its effect on businessmen's expectations, and the many different aspects of government actions, among other things, will all be important for the economic outlook of

the country, and any explanation that does not consider these is not complete. However, since this chapter is not intended to explore the causal forces behind the changes that took place in the economy but instead to examine the economic processes of change, no attempt will be made to take forces of this nature into account.

### **The Initial Recovery: 1934 to 1937**

The recovery after the beginning of the upturn was not so rapid as the descent into the depression had been. Although by the middle of 1937 both industrial production and the number of persons employed were as high as they had been in 1929, there still remained five million unemployed in the country, and the economy was not operating at full capacity. Productivity in manufacturing had increased by about 20 per cent, but the growth of the labor force resulting from the increase in population had not yet been absorbed.

As early as 1933 the government had made attempts to help the economy out of the depression, but the part these efforts played in the upward movement is not entirely clear. The bank holiday of 1933 and the subsequent measures taken to support the banking system were probably of very real aid in creating confidence. The National Industrial Recovery Act was an attempt to help business stave off the deflationary price slump and keep wages up. Although it had a turbulent existence, its effectiveness as a recovery measure is doubtful. The Agricultural Adjustment Act of 1933 attempted to curtail agricultural output, so that the farmer would receive higher prices for his output. Since a small contraction in the supply of agricultural products would cause a relatively large price increase, it was reasoned—probably correctly—that the total income of the farmer would be increased if the total supply of farm products were smaller. Such action would give the farmer more money to spend, but at the same time it must be remembered that consumers in general would have to pay higher prices for food products, so that they would have less to spend on other goods. It is extremely doubtful if this program actually stimulated recovery, although it did improve the position of the farmer relative to that of the wage earner. The Works Progress Administration, finally, was a program of work relief. In that it gave people money they would not otherwise have had, it stimulated consumer expenditures. This program was insignificant in size until 1936,

when it amounted to somewhat over \$2 billion. In evaluating its importance as an aid to recovery at that time, the effect of the program on wage rates and on businessmen's expectations must also be considered. These measures must be fitted into the general picture of recovery, irrespective of what conclusions as to their effectiveness might be reached on the basis of more detailed analysis.

The actual mechanism of recovery was strikingly similar to that of the decline, except that, of course, the mechanism worked in reverse. When new orders induced producers to expand their level of output, they hired more labor, more income was made available to consumers, and consumers, in turn, increased their expenditures. The increase in consumers' expenditures caused an increase in orders from producers, and producers were induced to expand further and hire still more labor. The process is a cumulative one, which continues to grow of its own momentum in just the reverse of the way that it did when the descent downward was in progress.

Once the movement upward was started, some industries were enabled to expand their capacity profitably in spite of the fact that industry as a whole was still operating at far below capacity. This was especially true of industries such as the electric refrigerator industry, which had scarcely existed in 1929. At the beginning of the upward movement this industry felt strongly the impact of increased demand resulting from the increase in consumer purchasing power. In some fields certain purchases of capital equipment were necessary with any revival of activity. In other fields the advance in technology forced the purchase of new equipment to meet the competition of other producers.

In the face of growing demand there were, inevitably, price rises, especially in agricultural goods. Just as inevitably, producers and distributors altered their attitudes about the holding of inventories. With rising prices and increasing demand there seemed to be good reason to order more goods than were currently being purchased. Merchants who had previously been disgorging goods and glutting the market began to order goods in expectation of future increases in demand and future price rises. The rate of production thus exceeded the current rate at which goods were being taken from the market. In this way inventory accumulation provided a stimulus to output and employment over and above that induced by current expenditures.



The analogies between the processes by which an economy descends into a depression and the processes by which it recovers from a depression cannot be extended to the length of time that these processes take. The descent that occurred from 1930 to 1932 was much sharper than was the partial recovery that took place from 1934 to 1937. One factor that would at least partially explain this difference is the psychology of individuals' reactions. Conservative business practice and the policy of playing safe make people attempt to consolidate their position during the descent into a depression with much greater rapidity than they would be induced to seek gain aggressively in the recovery period. Fear of loss produces a faster reaction than the hope of gain. It is therefore not always justifiable to consider the forces influencing the descent into a depression and those influencing the recovery from it as symmetrical.

#### **The Recession of 1938 and the Prewar Period 1939 to 1940**

The recovery that had started in the latter half of 1933 was interrupted in the third quarter of 1937 by a convulsive movement downward. In two months unemployment rose from 5 million to over 9 million. In the early months of 1938 it reached almost 12 million. Manufacturing output fell off by 40 per cent from the peak it had reached in 1937. In many ways the economy was back where it had been in 1934. The same process of descent that had occurred before repeated itself, but there were some differences. Producers reduced their expenditures on durable goods, and inventories declined, but personal income was only 15 per cent lower than it had been at the peak in 1937. This peculiarity is partly explainable by the fact that in most industries hourly earnings continued to rise throughout the recession, so that the increased rates of pay compensated somewhat for the reduction in the number of hours worked.

As has been indicated earlier, it is not the purpose of this description to suggest causes for the 1938 recession or explain all its individual peculiarities. There is a considerable amount of controversy among economists as to the initiating factors in this contraction, but the way in which the economy reacted is generally undisputed. The contraction that occurred between the third quarter of 1937 and the middle of 1938 operated by much the same mechanism as that of 1930 to 1932. Unemployment, resulting from a decline in output, made less

money available for consumers. Consumers' expenditures therefore declined, and this decline in consumers' expenditures resulted in further cutbacks in production. The period of descent into the recession was shorter and did not result in so sharp a contraction, but it should be remembered that, unlike 1929, the economy was still not operating at full employment in 1937.

In the period from mid-1938 until the latter part of 1940 economic conditions improved gradually, but throughout this whole period employment never regained the level it had reached in 1937. Productivity had increased, however, so that output by 1940 was substantially above the levels of both 1929 and 1937; the economy was not at full capacity, yet it was producing more goods than ever before. Personal income was almost back to the level it had reached in 1929. Although the population had increased so that per capita personal income was lower, this smaller amount represented more real goods because of the fall in the cost of living. The farmer, as well as the employed wage earner, was better off than he had been in 1929. There were 15 per cent fewer farmers than there had been in 1929, and these farmers were producing about 10 per cent more farm products. Farm prices generally were lower than they had been in 1929, but these lower prices were partially compensated for by the fact that prices of manufactured commodities were also somewhat lower.

Thus the economy, even though it was not operating at full capacity, had achieved just before World War II a higher level of output than ever before. The high level of output was the result of the evolutionary changes that were taking place in productivity; with regard to the short-run changes in the level of activity, the economy still had not recovered fully from the depression.

#### THE ECONOMY IN WORLD WAR II AND THE POSTWAR PERIOD: 1941-1947

The industrial mobilization of the United States economy during World War II was unparalleled in its vast productive achievement. In order to bring about such mobilization unprecedented changes in the economic and governmental structure were necessary. So large a change in the level of activity and the capacity of the nation had never before occurred in so short a time, and the manner in which it took place reveals a great deal about the operation of the economy. Al-

though the war production was carried out on the initiative of the government, it still had to be fitted into the framework of the economic system.

### **The Early Defense Program**

As early as 1939 significant steps were taken toward national defense. In September of that year the War Resources Board was created to review the Army and Navy plans for defense. By May, 1940, after the successful offensives of the Germans, it became evident that preparation for national defense and support of the Allies was imperative, and the National Defense Advisory Commission was formed to help carry out the defense program. The duty of the commission was primarily to help the Army and Navy obtain their requirements from the peacetime economy. By January, 1941, it was obvious that this informal arrangement would be inadequate for the increasing magnitude of the program. There was no integration between the Army and Navy defense programs and the munitions orders that had been placed by the British and other Allied countries. In certain lines bottlenecks due to insufficient raw materials and plant capacity began to appear, and with them they brought the problems of priorities and coordination. For this reason the Office of Production Management was established, and the real task of mobilizing the economy was begun.

During 1941 there was a constant acceleration of war expenditures, and these increasing expenditures provided a great stimulus to the economy. The government spent more than \$13 billion for war purposes; this was more than the total amount spent in the previous year for producers' durable equipment. These war expenditures not only stimulated producers directly by providing increased orders; they further provided an indirect stimulus through the increased personal income that resulted from them. Because consumers had more income, they spent more money, and this increased expenditure had the usual cumulative expansionary effect.

Early in 1941 the production of some goods became insufficient to meet both the government demand and the increasing current demand of the private sector of the economy. This was especially true of the production of basic metals, where capacity was quickly reached and expansion was a slow process. Such a situation naturally led to a rise

in prices, since the supply of the commodity was limited while the demand for it increased rapidly. The purchasers bid against one another for the limited supply until those who were not able to pay the higher price dropped from the market. The OPM material distribution system proved to be incapable of coping with this problem, and in August, 1941, the Supply Priorities and Allocations Board was set up in addition. The function of this new organization was to allocate resources among the military, defense aid, and civilian portions of the economy and to provide greater integration among the already existing government controls. In conjunction with this, price controls were extended to certain scarce commodities to prevent price rises that would have occurred in the face of the then current shortages. For different commodities the problem was handled in different ways. Where it was apparent that the increase in prices would not stimulate increased supply, price ceilings were adopted. In other situations premium payment plans were designed so that producers were paid the ceiling price for all output up to a certain amount and an additional premium for output in excess of this amount. In one or two instances (such as in aluminum production) price ceilings were actually adjusted downward when the increased output of the plants caused costs to drop off sharply. The first restriction of civilian goods production occurred in the automobile industry, where the increasing rate of production had been consuming more and more scarce steel. Early in 1941 the automobile industry consented to restrict its production by 20 per cent on a voluntary basis, but by August it was apparent that a cut of at least 45 per cent would be needed, and mandatory curtailment was adopted. Shortly after this time curtailment of production in order to conserve steel was extended to the farm-machinery and equipment producers.

It is very significant that the economy was not at full employment by the middle of 1941, yet bottlenecks and shortages in certain lines were so prevalent that complicated methods of control and allocation had to be instituted. Basic metals production was not the only bottleneck; the shortage of machine tools prevented the rapid expansion of the aircraft industry, and priority systems had to be set up in this field at a very early stage. The volume of defense production rose rapidly during 1941, but the increasing requirements made output lag far behind what was needed. The production schedules that were

adopted did not reflect the potential productive power of the economy but rather the fact that growth could not take place overnight. Bottlenecks had to be removed and capacity had to be extended before the nation could move further in the direction of specialized war production.

### **The Growth of War Production**

After Pearl Harbor an intensive program of war production was laid out. With the creation of the War Production Board, an attempt was made to provide more complete controls over the allocation of goods and to set in force a program of expanding plant facilities in the economy. The rapidly growing fabricating industries made necessary considerable expansion in the facilities for producing raw materials. Besides the very large expansion in the steel industry, tremendously increased facilities for the production of aluminum were needed to supply the material for the air armada that had been scheduled. Synthetic rubber plants were needed to make up the deficiency caused by the curtailment of natural rubber supplies, and aviation gasoline had to be produced on a scale hitherto unanticipated. In addition, other types of facilities had to be constructed or converted for carrying out the fabrication aspects of the munitions program. Dry docks and ship-construction facilities were needed for the scheduled ship-building program. Aircraft assembly plants had to be constructed, and many subcontractors throughout the country had to convert to war production. The army needed to build camps, bases, and supply depots. During 1942 over half of the government expenditure on war production was in the form of construction, facilities, and equipment. The impact of the war program was felt first by those sectors of the economy which were concerned with construction and the production of machines and equipment.

Employment reacted somewhat more slowly to the increased war expenditures, although by the middle of 1942 civilian employment equaled the total number in the labor force before the war. This is all the more remarkable because the army had by this time already drafted a part of the labor force, and over two million people were still unemployed. The answer to this paradox lies in the fact that there was a substantial increase in the number of people who were induced to enter the labor force. Under the stimulus of changed conditions by

mid-1942 over three million people had entered the labor force who had not been in it before. Housewives took jobs in factories, retired people went back to work, and those who were about to retire continued work. The war conditions had made many more people willing to work. Some were induced to work for patriotic motives; others were induced to work by the ease of getting a job and the high rate of pay. The wives of drafted soldiers often took jobs that they would not have held were it not for the fact that their husbands were away from home. The expansion of civilian employment continued in 1943, in spite of the increased number of men being drafted into the army. By the end of 1944 civilian employment plus the number of men in the armed services exceeded the total prewar labor force by eleven million people, and unemployment had been reduced to about half a million.

During the war the number of people that were willing to work increased very sharply with the increase in the level of activity of the economy. For this reason it is difficult to say just when the economy reached full employment or if it was operating at more than a full employment level during the peak of the war production. In a less pronounced way it is probably true that the number of people willing to seek employment in the economy is always somewhat dependent on the availability of jobs and the rate of pay. Since the level of activity in an economy in itself is a factor affecting the size of the labor force, the term "full employment" loses precision in its meaning.

### **The Change in Gross National Product**

The magnitude of the war production program at its peak can be appreciated only by viewing it in over-all terms. Examination of specific munitions items does not throw much light on the productive ability of the nation at peak war production in comparison with the volume of civilian production prior to the war. By the end of 1944 gross national product (in current prices) had risen to the annual rate of \$220 billion as compared with about \$100 billion in 1940. Although prices had risen, output had almost doubled between these two periods. Consumers were getting fewer durable goods, but they were getting more nondurable goods; on balance they were probably about equally well off. The government in 1944 spent \$97 billion on goods

and services—an amount of the same magnitude as the total production of the economy in 1940.

It is important to note, however, that in spite of the huge demand created by the war, gross national product did not reach its peak until the last quarter of 1944. It took the economy three years to reach peak output. It was not sufficient that the demand for goods existed

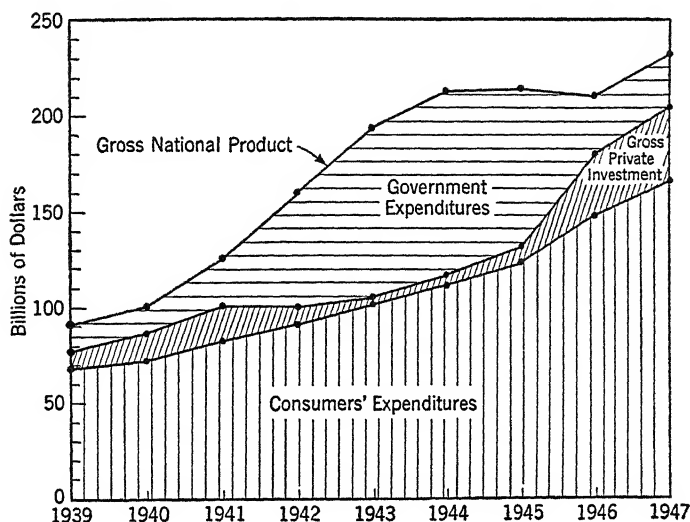


Chart 9. Components of gross national product 1939-1947. (Source: Department of Commerce, National Income Division.)

in the economy; it took time to bring about the greatest possible fulfillment of this demand.

The magnitude of war production sharply reveals the limited extent to which the prewar economy was utilizing its potential capacity. Chart 9 shows that the war production was primarily an addition to, rather than a substitution for, the civilian production that had been taking place in the prewar period. This chart shows the level of the various components of expenditure for gross national product for the period 1939 to 1947. Total consumers' expenditures rose almost continually throughout the period, and government nonwar expenditures decreased very little if at all. Private capital formation declined almost to nothing during the peak of the war production, but here it must be remembered that much of what is classified as war outlay was expenditures for durable producers' goods. All in all, in spite of the price

rise, the economy continued to be almost as well off in terms of non-war production and, in addition, turned out the huge volume of war production.

In many ways war production is not comparable to civilian production. Before the war many workers were employed in agriculture and service industries, where machinery and mass-production techniques are not used to any large extent. In producing war munitions they were employed at tasks that utilized such techniques, so their output per man-hour rose substantially. In a peacetime economy, however, it may well be more desirable to employ these people at their former tasks, even though the apparent output per man-hour may be lower. An economy organized for civilian production may not afford the same opportunity for the use of mass-production techniques that is present in the tremendous volume of war output. In other words, technical processes may permit a larger amount of munitions output than of civilian goods output. Nevertheless, it is still true that the level of activity during World War II was at an all-time high.

### **War Finance, Price Control, and Rationing**

The need for financing the war expenditures, together with the cumulative repercussions of the change in the level of activity in the economy, brought with them a host of complicating problems during this period. The level of Federal government expenditures in 1944 was \$96 billion, compared with the prewar expenditures of about \$10 billion. Funds to finance these expenditures had to be obtained, and the two possible sources were taxation of business and consumers and the borrowing of money through the sale of government bonds. The government used taxation to procure a large part of the needed funds, and the remainder was borrowed. Consumers were urged to purchase as many war bonds as they could; a substantial quantity were sold to businesses; and the rest were sold to banks, which through the expansion of credit created sufficient funds.

When the government made expenditures on war goods, individuals received a great deal more money as income. More people were employed, and it became necessary to pay higher wages to attract workers into the war industries. The total amount of wages and salaries paid in the nation increased steadily. In 1941 individuals received about \$61 billion in wages and salaries. This increased to \$81 billion in 1942,



to \$105 billion in 1943, and finally to \$115 billion in 1944. The income of proprietors and property owners rose from \$20 billion in 1941 to \$34 billion in 1944. Thus, both employees and owners received more income. The production of civilian goods could not increase similarly, so that the quantity of goods available to be purchased was limited. The normal reaction in such a situation would have been for prices to have risen until all expendable income had been absorbed. The price increase would not have been restricted only to an amount sufficient to absorb the increased income that actually existed in 1942, 1943, and 1944. Had the price increases been permitted, the sellers of consumers' goods would have had a great deal more income, which would have become available for further purchases, so that a cumulative price rise over and above the initial price rise would have been started. Such a reaction not only would have permitted some individuals to profiteer at the expense of others but might very well have endangered the war effort as well.

In order to prevent the increasing volume of war expenditures from having such a disastrous inflationary effect on the economy, the government undertook four basic programs: (1) heavy taxation, (2) bond selling, (3) price control on consumers' commodities, and (4) rationing of some consumers' commodities. Heavy taxation took a much larger portion of individuals' income during the war than it had before; in 1941 personal tax receipts (\$3 billion) were only 3 per cent of individuals' income, but by 1944 these receipts (\$19 billion) had increased to 12 per cent of individuals' income. By this means the government hoped to absorb a portion of the newly created income and thus narrow the gap that existed between the value of the goods available at existing prices and the value of the funds that consumers had to spend. The selling of bonds, especially to consumers, was another way of absorbing some of this increased purchasing power. By absorbing individuals' money the payroll savings plan left less money in their hands to spend. To reduce inflationary pressures it was preferable to sell bonds to people who would have otherwise spent that much more money. Selling bonds to banks and to people with higher incomes who would have saved the money anyway gave the government funds, but it did not reduce consumers' expenditures and so did not aid in suppressing inflation. But these two measures were not sufficient to remove enough funds from the hands of the consumers to prevent

commodity shortages. There was still more money in the hands of consumers than there were goods available to be bought with this money at the existing prices. Price control was therefore necessary in order to prevent the cumulative effects of price rises. Rationing was instituted to make sure that each consumer would get his fair share of those goods which were available, since there were not enough to give everyone as much as he could buy. Under these conditions the savings of individuals mounted rapidly. In 1941 personal income (\$95 billion) had been only \$4 billion in excess of personal taxes and consumers' expenditures, but in 1944 personal income (\$165 billion) was \$34 billion in excess of personal taxes and consumers' expenditures; current savings had increased from 5 per cent of consumers' income to over 20 per cent of their income. The war economy was a controlled economy, but such controls were necessary in order to obtain the allocation of resources to war production in sufficient volume and to prevent the cumulative reactions of the change in the level of activity from causing a major economic upheaval. Knowledge of the basic processes and mechanism by which the economy operates was essential to intelligent control of the war economy.

### **The Period of Reconversion and the Postwar Economy**

The problems that had accompanied the increases in war production caused many people to fear the reconversion period when the government's war expenditures would be cut down. It was felt that the stoppage of production in the war plants would cause so much unemployment that via the cumulative effects on personal income and consumers' expenditures, a depression would necessarily follow. In spite of the fact that the government cut war production drastically in the last quarter of 1945, however, the anticipated decline did not occur. The major reasons probably lay in the extreme shortages of consumers' goods and the accumulated purchasing power of consumers, which provided a strong market for such goods.

The period of reconversion did not immediately let loose a flood of consumers' goods upon the economy. Producers had to change over their factories and obtain materials with which to start production. In many cases the higher stages of production could not take place until there were sufficient supplies at the more basic levels. But because producers immediately embarked on reconversion programs,

the decline in employment was small and was mostly limited to the frictional unemployment caused by the shift. Personal income and personal consumption expenditures continued to increase steadily. The increased consumers' expenditures and the increased volume of producers' expenditures on investment goods in large measure substituted for the decline in government expenditures. The decline in gross national product was less than 15 per cent from its wartime peak, and the amount of goods purchased by consumers increased steadily.

With the end of the war came a demand that the various wartime controls be relaxed. The need for operating a war economy had passed, and it was argued that the controls prevented the establishment of a free economy. Rationing on most items had been abolished as the particular commodities had become more plentiful, but price control still remained on most consumers' commodities. The removal of price control in the middle of 1946 was followed by a very sharp price rise; food prices increased by one-third in six months, and clothing and house furnishings increased by one-eighth. Although production of consumers' goods increased during this period, it did not increase fast enough to absorb the large volume of purchasing power that was available.

Personal income has continued to rise since the period of peak war production in 1944, but the amount that people have saved out of their incomes has fallen. As noted above, personal income in 1944 was at the rate of \$165 billion a year, and saving was at \$34 billion a year, but by the last quarter of 1947 savings had fallen to a rate of \$12 billion a year, although personal income had risen to over \$200 billion a year. Higher prices and greater availability of goods had either forced or induced consumers to spend more of their incomes. Many individuals were probably spending amounts in excess of their incomes in 1947, using the savings that they had accumulated during the war for current consumption.

#### SUMMARY

Changes in the level of economic activity may be brought about by a variety of causes, but the repercussions of all such causes on the economy will always operate through prices, output, and employment. Furthermore, the process by which an economy changes level will,

in turn, have cumulative repercussions on itself, so that once started it may continue in the same direction by feeding on itself. The period 1929 to 1947 amply illustrates the meaning of changes in the level of economic activity, and the examination of this period reveals the interdependence among income, expenditures, output, and employment. The following chapters will attempt to weave all these elements into a coherent explanation of the economic processes involved.

## 9. The Basic Concepts of Income Analysis

Income analysis, as has been indicated previously, does not attempt to explain the causes of changes in the level of economic activity. Rather, it explains the process by which such changes take place. In the present chapter attention will be focused upon the nature and role of the economic mechanism in income analysis. Certain reactions and relationships in the economy must be understood before it is possible to explain fully what takes place during a downswing or upswing.

### CHANGES IN TOTAL EXPENDITURES, PRICES, AND OUTPUT IN THE ECONOMY

#### **The National Income and Product Account**

A logical starting point for the study of the economic processes is the national income and product account that was developed in Part One. The total of this account is the gross national product; it is equal to the total market value of all goods produced in the economy. The two sides of this account show two different aspects of total production. On the right-hand side the sales made to various groups in the economy and the change in inventories are shown; the change in inventories represents the difference between the production that has taken place and the total amount that has been sold. The left-hand side shows the various elements of costs and profits related to the creation of the gross national product: the allocation of the total market value of production. Table 37 shows the national income and product account for 1947 as it was given on page 51, Chap. 3.

The sales to the various groups shown on the right-hand side of the national income and product account have a significance beyond that of simply showing the disposition of part of the total production. Expenditures by these groups may to a very large extent determine the magnitude of the gross national product. The reason for their im-

*Table 37. National Income and Product Account, 1947 \**

(In millions of dollars)

Allocations		Sources	
Capital consumption allowances..	13,299	Sales to consumers.. . . .	164,755
Indirect taxes.....	18,488	Sales to government.....	27,952
Social insurance contributions .	5,588	Net sales to abroad.....	8,898
Wages and salaries . . . . .	121,913	Sales to producers on capital ac-	
Income of unincorporated enter-		count .. . . .	29,413
prises †.....	45,997	Change in inventories.....	618
Net interest ‡ . . . . .	4,293		
Dividends .. . . .	6,880		
Corporate profits taxes	11,709		
Undistributed profits. . . . .	11,195		
Adjustments to allocations §. . . .	-7,726		
Total charges against gross na-		Total sources of gross national	
tional product. ....	231,636	product.....	231,636

\* Source: *Survey of Current Business*, July, 1948, Tables 1, 2, 4, pp. 16-17, U.S. Department of Commerce.

† Includes rental income of persons.

‡ For an explanation of net interest see the appendix to Chap. 3.

§ These adjustments include inventory valuation adjustment, business transfer payments, subsidies, current surplus of government enterprises, and the statistical discrepancy. These items are explained in the appendix to Chap. 3.

portance lies in the reaction of producers to changes in expenditures and the resulting effect on inventories in the economy. When expenditures on goods and services in the economy contract, it does not follow that the inventories in the hands of producers will increase. For the most part producers hold inventories as a necessary part of their business; inventories are not simply the goods produced in excess of what people wish to buy. With a contraction in expenditures for specific goods, producers holding inventories of these goods, far from allowing these inventories to pile up, may even try to contract their holdings if they anticipate worse conditions in the future. They can accomplish

this either by cutting output or by reducing prices to induce purchasers to buy more. Similarly, an increase in expenditures for specific goods above the level of current production will not necessarily result in a drain of the stock of these goods in the hands of producers; the increase in expenditures may well convince producers that the market for such goods is very strong, so that they will be led to increase output or to raise prices. When the volume of expenditures changes, therefore, inventories do not reflect the change. The change in expenditures has a direct effect on the level of gross national product, and inventories tend to reinforce this effect rather than reduce it. If the amount spent by various groups in the economy is reduced, the gross national product will fall by the same amount and, in addition, by any decline in inventories.

### **The Effect of Changes in Expenditures**

Since gross national product is the total output of the economy valued at market prices, it follows that when gross national product declines, prices and/or output in the economy must have declined. In actual practice it can be shown that when there is a fall in expenditures, *both* prices and output will decline. The factors governing the specific reactions of producers are quite different for different parts of the economy.

**FARM PRODUCTS.** A fall in expenditures for farm products will not ordinarily result in a contraction of output. The impact of the decrease in the volume of expenditures will be absorbed by a decline in prices, and output will be maintained. Two circumstances account for this reaction on the part of the farmer. (1) An individual farmer usually produces only a very small part of the total output of a given agricultural product, and any contraction of his output would have practically no effect on the going market prices. The farmer is thus forced to accept these going market prices; he can only decide how much he will produce at that price. (2) The cost conditions under which the farmer produces are such that it will be to his advantage to maintain his output even though prices for his products may fall quite far. The amount that a farmer produces does not influence his costs very much. Were he to reduce his output to half, he might save some money on seed, fertilizer, and gasoline for his tractor; but since these out-of-pocket costs are such a small percentage of the value of his product,

the amount he would thus save would not compensate him for cutting the total value of his production by 50 per cent. The farmer will maintain his output because any curtailment in it would reduce his income more than it would reduce his costs. Prices could fall a great deal before the farmer would be forced to sell his crops for an amount below his out-of-pocket costs; and as long as he gets some return above these costs, he will keep his output up.

Even for farmers who raise livestock or do dairy farming a decline in expenditures will tend to cause prices to fall far more than it will restrict output. The mechanism in this case is somewhat more elaborate, since the feed costs of dairy farmers and livestock raisers represent a large percentage of the total market value of their products, and it would seem at first glance that prices could not fall very far before the farmer would be paying out more for feed than he would be receiving for his products. However, if these livestock and dairy farmers were to contract the amount of feed they purchase, their action would have immediate repercussions on the price of grain. As was pointed out above, when expenditures on grain decline, its production will be maintained but its price will fall to the point where the total supply will be consumed by the economy. A fall in the price of grain is a fall in the costs of livestock and dairy farmers, so they can continue production at lower prices than they could before. The output of livestock and dairy farmers will thus tend to be maintained at a constant level in the face of a decline in expenditures, because the price of feed (their chief out-of-market cost) will fall as low as is necessary to secure the consumption of a relatively constant amount of it.

When there is an increase in expenditures on agricultural products, the major reaction similarly centers about price. Agricultural prices rise to the point at which all the increased expenditures are absorbed by the price rise; the purchasers merely pay higher prices for the same amount of agricultural products. The farmer does not expand his output when prices rise; he was already producing all he could, and he will continue to do so.

The long-run effects of changes in expenditures for agricultural products may be different from those described above. If expenditures on agricultural products contract over a long period, the depressed state of prices and consequently of farmers' income will drive people away from the farm and into other industries; and similarly, when



there is an increase in demand, the high income of the farmer will induce people to leave less well-paid employment in other industries to take up farming. These reactions do not occur in the short run for several reasons. (1) There is a considerable amount of immobility between occupations that are as different as farming and, say, manufacturing; the shift of individuals from one occupation to another occurs only slowly over a long period of time. (2) The lowest prices for agricultural products and thus the lowest farm incomes occur in depressions, when it is not possible for farmers to leave the farm and get jobs elsewhere. In a depression unemployment is widespread in the economy; and if the farmer left his farm, he would only add to the mass of the unemployed. He is better off to continue farming; for although his income from farming may be low, it is higher than it would be if he were totally unemployed. In prosperous times, on the other hand, there are corresponding forces that prevent an increase in the number employed in agriculture. Employment opportunities in other industries are numerous, and wages are rising, so that the marginal workers may not be any more attracted by the relatively high income in farming than they are by other opportunities that present themselves. In the short run, therefore, a change in expenditures on agricultural products will not change the number of people engaged in agriculture greatly. It will have its impact largely on agricultural prices rather than on agricultural output.

**MANUFACTURED PRODUCTS.** A fall in expenditures for manufactured products usually does not produce the same reaction that a fall in expenditures for agricultural products does. The manufacturer is ordinarily in a position quite different from that of the producer of farm products. In contrast to the farmer, the manufacturer frequently sells in a market where the price for which he can sell his product bears a direct relation to the amount of his output. He can increase his output only at the expense of lowering his price; and if he contracts his output, he may be able to sell all of it for a higher price. When there is a decline in expenditures for his product, therefore, he has the alternative either of maintaining his price and contracting his output or else of lowering his price and maintaining his output. The cost situation of the manufacturer, again in contrast to the farmer, is usually such that he will be led to a price-output policy involving some lowering of price, together with some contraction of output.

The out-of-pocket costs of most manufacturers are much higher than those of farmers. If a manufacturer were to maintain output in the face of a large decline in expenditures for his product, he would usually find that in order to sell all his output, the market price of the product would have to fall below his out-of-pocket costs. In other words he would be paying more for the materials and labor that went into the product than his customers would give him for the finished good. Under these circumstances he would reduce his losses if he lowered output. The price he could get for his product would then not fall so far, and he would reduce his costs more than he would reduce his income. No producer will sell for a price below his out-of-pocket costs; instead, production will be cut until the entire output can be sold for a price at least equal to these costs. In many manufacturing firms the cost of labor and raw materials (the principal out-of-pocket costs) may constitute as much as 85 or 90 per cent of the market value of the product. For these products the market price will not be reduced more than 10 or 15 per cent unless costs also fall, so that the major impact of a decrease in expenditures on these products must necessarily fall on output.

This situation may be modified somewhat if, when expenditures on the finished product decrease, the costs of producing the product also fall. This may occur when agricultural raw materials are used. When the output of an industry using agricultural materials is cut, the producers' expenditures for these agricultural raw materials will fall. As has been pointed out above, this reduction in expenditures will cause the price of the agricultural raw materials to decline. If raw materials are important as a part of the costs of the manufacturer, he will then produce more than he would have if his costs had not fallen. An example of this type of reaction is found in the cotton-textile industry. When expenditures on cotton textiles decline, textile manufacturers curtail their production and with it their use of cotton, thus causing a sharp fall in the price of cotton. This reduction in the cost of cotton to the manufacturers encourages them not to cut production so much as they otherwise would have. The final result is that output declines less and prices decline more because agricultural products were used as raw materials.

When a producer uses a large amount of hired labor or uses raw materials that had been produced by employing relatively large amounts of hired labor, the results may be quite different. Unlike the

price of agricultural goods the wage rate will not fall sufficiently in the face of a decreasing demand for labor to maintain full employment. When a producer contracts his output, wage rates will fall somewhat, but wages are sticky, and they will rarely fall far enough to induce the producer to maintain employment. As a result, in industries where a large amount of labor is hired directly or raw materials that have been produced by large amounts of hired labor are consumed, out-of-pocket costs for the producer will not be forced down much by the contraction of output. Prices in such industries will not fall so far and output will contract more than in industries that are more highly related to agriculture.

With an increase in expenditures for manufactured products, similarly, producers may expand their output without increasing the prices of their products, or they may prefer to raise the prices of their products and maintain the same output. The latter may occur even though excess capacity exists in the industry, and it must necessarily occur when a plant or industry reaches capacity. In periods when there is little unemployment, the hiring of additional labor by one firm in the attempt to increase output may only bid it away from other firms. When this happens, the increase in expenditures will merely shift labor around in the economy, resulting in higher costs and higher prices without any appreciable increase in the total amount of labor employed. Likewise, as industries attempt to expand under the impact of increased expenditures, they will need more raw materials. When the raw materials are agricultural products, the attempts by manufacturers to buy more of them will cause a sharp rise in raw material costs, and this in turn will make the manufacturers raise their prices instead of increasing output as much as they otherwise would have.

### **Changes in the Level of Gross National Product, Prices, and Output**

Changes in the level of expenditures will thus cause a change in the level of gross national product with which will be associated both price and output changes. Not all parts of the economy react in the same way to changes in gross national product. In the agricultural sector the characteristic reaction will be one of changing price with the level of output remaining constant, but in the manufacturing sector both price and output changes will occur, the extent of each depending on the capacity of the industry, the amount of unemployment in the economy, the nature of raw materials used by the manufacturers,

and the price policies of the manufacturers. Every change in the level of gross national product will involve price and output changes in an interrelated pattern, with different reactions taking place in the different sectors. Only when activity in each industry reaches a stage above which it is difficult to go because of bottlenecks or limitations of capacity and available labor will the predominant reaction throughout the economy be one of increasing prices rather than of increasing output.

These basic reactions in different parts of the economy are extremely important in analyzing what takes place as the economy goes into a depression or starts off into an inflationary spiral. But an explanation of exactly how prices and output change in each part of the economy would, of necessity, have to take into account simultaneously all the considerations that have been mentioned in the above sections. In discussing income analysis, therefore, little additional attention will be given to the exact price-output patterns that will result from a change in the level of gross national product; for convenience it will be assumed that if the economy is operating at less than full capacity, an increase in expenditures on manufactured products will cause additional output and employment and an increase in expenditures on agricultural products will merely increase their prices. When a point of relatively full employment is reached, it will be assumed that prices in general will rise.

The remaining part of this chapter will be concerned with tracing the sources and examining the bases of the expenditures for goods and services. This will involve relating current expenditures to current income and showing how capital expenditures fit into the economic processes. In other words, it will involve an examination of what is meant by saving and investment and how these two quantities affect the level of expenditures in the economy.

#### THE LEVEL OF EXPENDITURES AND SAVING AND INVESTMENT

##### **Income and Expenditures on Current Account in the Economy—Gross Current Saving**

Not all the expenditures for goods and services shown in the national income and product account represent consumption. Producers' durable goods bought on capital account, any increase in inventories,

and net sales to foreign countries are all goods and services produced in the current period but not directly consumed in it. Only the goods and services that consumers and the government have currently purchased are considered to have been consumed.<sup>1</sup> The difference between the total amount the economy has produced and the total that has been consumed is gross current saving. This difference represents the part of production that is saved and does not enter into current consumption. Producers' durable goods that have been purchased during the current period are available for future production. Increases in inventories represent production that has not been used up. Even the net sales to foreigners represent goods and services that have been loaned to foreign countries rather than consumed by individuals in the domestic economy.

Gross current saving does not represent the amount that has been added to the wealth of the economy by production during the current period. It is the difference between the gross output of the economy and current consumption, but in the process of producing this gross output capital has been used up. *Net* current saving takes account of this capital which has been used: net saving is the difference between *net* national product and the current expenditures of consumers and government. For the purposes of income analysis, however, the concept of gross current saving will prove to be more useful than that of net current saving.

Gross current saving in the economy is more than just a residual between two unrelated elements. Most of the current expenditures in the economy are highly related to the current incomes of the individuals or groups that make them, so that in most cases current saving represents a conscious decision to consume less than the total amount

<sup>1</sup> Many of the goods that consumers purchase are of a durable or semidurable nature and so may not actually be immediately consumed. For statistical convenience, however, consumption is considered to take place when a consumer acquires ownership of a consumption good, whether durable or not. For this purpose houses are not considered as consumers' durable goods; for the treatment of this item see the appendix to Chap. 3, p. 63. In like manner, statistically, current expenditures made by the government are considered to have been consumed when purchased even though they may be producers' durable goods. No expenditure made by the government is ever treated as a capital expenditure; all goods it acquires are written off as consumed when purchased.

of income. In other words, to explain the level of current expenditures in the economy it is necessary to consider the amount of gross current income and the reasons why all of it is not spent for consumption. Such an analysis of why consumption in the economy is not so large as production must necessarily lead to a study of the accounts of the different sectors of the economy. The left-hand side of the national income and product account shows how the income of the economy is allocated; by tracing what happens to this gross current income the sources of gross current saving can be found. Gross current saving holds the key to explaining why a given level of current expenditures exists with a specific level of gross national product.

**GROSS CURRENT BUSINESS SAVING.** Gross national product is the gross current income that producers<sup>2</sup> have to allocate among the various elements of costs, taxes, and profits. What producers pay out to individuals and the government becomes income to these latter groups; the total of these payments can be considered the current expenditure of the producing sector. The amount of the gross national product that producers do not pay out as income to either individuals or the government is their gross current saving. This gross current business saving is the difference between what producers as a group receive from the other sectors and what they pay out to individuals and the government; it represents a part of the gross current income of the economy that cannot result in consumption expenditures. The more producers refrain from passing on either to individuals or to the government the less of the gross income of the economy will be available for current expenditures. In this way producers can bring about current saving in the economy.

Gross current business saving includes such allocations as capital consumption allowances and undistributed profits. These items do not become current income for any individual or for the government. In addition, the items that have so far been grouped together as adjustments in the national income and product account are not allocated by producers to individuals or to the government; these adjustments therefore will be treated as part of gross current business saving.<sup>3</sup> In

<sup>2</sup> For this purpose the government is considered to be a producer when it hires people to work for it and pays them wages and salaries. All the other activities of the government, however, *e.g.*, the payment of relief, are apart from its activity as a producer.

<sup>3</sup> In addition to capital consumption allowances and undistributed profits, gross

Table 38 the national income and product account has been rearranged to show gross current business saving and the allocations that producers make to individuals and to the government. This account is a restatement of Table 37 in this chapter.

*Table 38. National Income and Product Account, 1947*

*(In billions of dollars)*

Allocations		Sources	
Gross current business saving . . . .	16.8	Sales to consumers . . . . .	164.8
Capital consumption allowances . . . . .	13.3	Sales to government . . . . .	28.0
Undistributed profits . . . . .	11.2	Net sales to abroad . . . . .	8.9
Adjustments to allocations . . . . .	-7.7	Sales to producers on capital account	29.4
Payments to individuals by producers *	179.1	Change in inventories . . . . .	0.6
Wages and salaries . . . . .	121.9		
Income of unincorporated enterprises . . . . .	46.0		
Net interest . . . . .	4.3		
Dividends . . . . .	6.9		
Payments to government . . . . .	35.8		
Indirect taxes . . . . .	18.5		
Social insurance contributions . . . . .	5.6		
Corporate profits taxes . . . . .	11.7		
<hr/>		<hr/>	
Total charges against gross national product † . . . . .	231.6	Total sources of gross national product † . . . . .	231.6

\* Producers as shown here include not only the business sector but also the government and households in their role as employers. Thus wages and salaries include compensation of government employees and the wages of domestic servants.

† Detail may not add to totals because of rounding.

The allocations of gross national product that the business sector makes to individuals and to the government would be sufficient to permit them to purchase goods and services on current account to the extent of gross national product minus gross current business

current business saving under the above definition includes two major adjustment items, the corporate inventory valuation adjustment and the statistical discrepancy, and two minor adjustment items, business transfer payments and subsidies minus current surplus of government enterprises. The two minor adjustments, strictly speaking, do not constitute a part of gross current business saving, but in light of their lack of significance they will not be treated separately here. For a more detailed treatment of these items see the appendixes to Chaps. 3 and 5.

saving. Individuals make current payments to the government in the form of taxes, and the government makes current payments to individuals in the form of transfer payments, but these do not alter the total amount available for the continued purchase of goods and services by these two sectors. These payments alter the distribution of funds between individuals and the government, but they do not alter the total amount of funds that exists. When the government gives funds to individuals, it decreases the amount it has available to spend on goods and services itself, but at the same time it increases the amount individuals have to spend on goods and services by exactly as much. The reverse is true when individuals give up a part of their income in the form of tax payments to the government. For this reason only the amounts of income that are retained either by individuals or by the government will reduce the total available for current expenditure on goods and services and so will be sources of saving for the economy.

**CURRENT PERSONAL SAVING.** The difference between the personal income that individuals receive and the personal tax payments and consumers' expenditures they make is their current personal saving. Current personal saving is that part of the income of individuals which is not used up in payments on current account; it indicates that they have refrained from consuming a part of what was available to them for consumption. Some individuals, of course, will have incomes that are smaller than their outlays on current account. When this occurs—when personal tax payments and consumption expenditures exceed an individual's income—he must be using up past accumulations of funds or borrowing to meet current outlays. This process represents current personal *dissaving* of an amount equal to the difference between expenditures and income. At any one time some individuals in the economy will be saving and others will be dissaving. Total current personal saving for all individuals equals the current personal saving that is taking place in the economy over and above the current personal dissaving that is going on. During the depression of the thirties the amount of dissaving was greater than the amount of saving, so that for individuals as a group current personal saving was negative: consumers' expenditures and personal tax payments were greater than personal income.

The derivation of personal saving is shown in the personal income account in Table 39. This table shows personal income in terms of



individuals' receipts of factor and nonfactor income<sup>4</sup> and is a rearrangement of the personal income account shown in Chap. 4.

Table 39. *Personal Income Account, 1947*<sup>\*</sup>

(In billions of dollars)

Allocations		Sources	
Personal tax and nontax payments	21.6	Factor payments to individuals . . . .	179.1
Consumers' expenditures . . . .	164.8	Wages and salaries. . . . .	121.9
Personal saving . . . . .	8.8	Income of unincorporated enterprises . . . . .	46.0
		Net interest . . . . .	4.3
		Dividends . . . . .	6.9
		Nonfactor payments to individuals..	16.1
		Net government interest . . . .	4.4
		Transfer payments . . . . .	11.7
Total personal outlay and saving..		Total personal income.....	
195.2		195.2	

\* Source: *Survey of Current Business*, July, 1948, Table 3, p. 16, U.S. Department of Commerce.

It will be noted that factor payments to individuals on the source side of the personal income account are the same as those shown on the allocation side of the national income and product account. Consumers' expenditures on the allocation side of Table 39 are the same as sales to consumers on the source side of the national income and product account in Table 38. Personal saving is the difference between what individuals receive, shown on the source side of Table 39, and what they pay out, shown as allocations of their income.

**CURRENT GOVERNMENT SURPLUS AND DEFICIT.** The government has a current surplus when it collects more in taxes than the total it spends on goods and services and pays out to individuals and firms in the form of transfer payments and subsidies. This surplus is a source of current saving for the economy. Government receipts represent a portion of the current income of producers and individuals that has been paid out to the government; and if these receipts are not all currently spent, the government will have received a part of the income of

<sup>4</sup> Individuals' receipts of factor income represent payments made by producers to the factors of production. As noted above they include compensation of government employees and domestic servants, as well as payments made by the business sector proper.

the economy that it has not paid out. In like manner when the current outlays of the government are greater than its current receipts, it incurs a deficit and must borrow to finance its additional outlays. This current deficit is dissaving for the economy.

On the basis of Tables 38 and 39, the government account can be constructed. The sources of the government's revenue are the payments that business and individuals make to it. Its outlays are expenditures on goods and services and nonfactor payments made to individuals. This account is shown in Table 40.

*Table 40. Government Account, 1947 \**

*(In billions of dollars)*

Allocations	Sources
Government expenditures on goods and services. . . . . 28.0	Payments to government by business 35.8
Government nonfactor payments to individuals †. . . . . 16.1	Payments to government by individuals . . . . . 21.6
Government surplus. . . . . 13.3	
Total government outlay and surplus. . . . . 57.4	Total government receipts. . . . . 57.4

\* Source: *Survey of Current Business*, July, 1948, Table 3, p. 14, U.S. Department of Commerce.

† Included in this total is \$0.6 billion of consumers' bad debts which would more correctly be considered a business nonfactor payment to individuals. Because of the minor significance of this item, however, it has not been separated out. Omitted in the above account, for the same reason, is the item "subsidies minus current surplus of government enterprises." This amounted to -\$0.2 billion and was included as a part of gross current business saving. For detailed treatment of these items see the appendix to Chaps. 3 and 5.

All of these items with the exception of the government surplus can be found in Table 38 or 39. Government surplus is the difference between receipts and outlays.

**TOTAL GROSS CURRENT SAVING.** The total gross current saving in the economy is the sum of the saving done by producers, individuals, and the government: gross current business saving plus current personal saving plus the current government surplus. If there is current personal dissaving or a current government deficit, these will appear as negative saving, and the total of the three elements will still represent gross current saving for the economy. In other words, the actions of producers, individuals, and the government will all affect the

amount of gross current saving that takes place. The essential characteristic of current saving is that outlays on current account must be smaller than receipts on current account. Wherever in the economy this occurs, there is saving; some group or individual is refraining from spending all he receives.

Total gross current saving in the economy represents the part of gross national product that is withheld and not used for purchases on current account. As has been pointed out above, saving is more than simply the residual of income that is left over after current expenditures are made; in many respects saving is the result of conscious decisions not to spend. An examination of the forces that determine the magnitude of saving by business, individuals, and the government will explain much about why a given level of current expenditures may be related to a particular level of income. Some of the factors that influence the magnitude of saving are institutional, and others depend on individual decisions. In the case of business, gross current saving depends upon such factors as the methods of computing depreciation that are used, the level of profits, and the dividend policies of corporations. For individuals, current personal saving will be greatly affected by the level of personal income and its distribution among individuals, and also by such elements as the level of prices, the amount of past saving that individuals have, the individual's past position in the economy, and his future expectations. Current government saving or dissaving depends upon a large number of influences, among them the political climate and the immediate requirements of the economy, especially the condition of business. The factors that bear upon the level of saving will be treated in greater detail in the following chapter; here it is sufficient to point out that the decisions to save resulting from the institutional organization of the economy and from current conditions will determine the level of current expenditures which will be related to a given level of income.

### **Expenditures on Capital Account—Gross Current Investment**

In addition to the expenditures made by individuals and the government on current account, other expenditures, which are made on capital account, appear in the national income and product account.<sup>5</sup> The capital expenditures that appear in the national income and prod-

<sup>5</sup> The distinction between current and capital transactions was drawn in Chap. 2.

uct account may be defined as gross current investment. This definition, however, is not too enlightening in describing the investment process in the economy. The primary requisite for current investment is that expenditures be made for goods that are not currently consumed by individuals, producers, or the government. No purchase that appears as a current expenditure on the books of the buyer can be considered an investment; such transactions are written off as current consumption in the economy. The buyer must consider the purchase to be a capital outlay; a portion of current output is in this way made available for use in the future. Current investments, therefore, will comprise those transactions which are *capital* transactions for the purchaser and *current* transactions for the sellers. A transaction that is a current transaction for the purchaser and a capital transaction for the seller would, similarly, be a disinvestment, since it represents the consumption in the current period of a part of the stock of goods existing in the economy. The past investment that occurred when this stock of goods was created is being drawn down. A transaction that is a capital transaction for both parties is merely an interchange of already existing assets in the economy, rather than the setting aside of current output for future use, and does not appear on the national income and product account at all. If one producer sells an already existing building to another producer, for example, there has been no current investment; there has simply been a change in the ownership of the building.

**PRODUCERS' DURABLE GOODS.** The most obvious types of investment expenditures are those made by producers for buildings, machinery, equipment, or other producers' durable goods. The amounts of these expenditures do not appear on the buyers' books as allocations of gross current income; they are capital outlays. The balance sheet of the buyer is changed, but his current income statement is not. For the seller of the producers' durable goods, however, the transactions are on current account, since they represent receipts from current sales. As such, they will enter the national income and product account as a part of the production of the economy.

Some of the expenditures on durable goods made by producers serve to replace productive capacity that has been used up or become obsolete. This replacement is necessary if the economy is to keep its productive power intact, and such replacement expenditures do not

represent any net addition to the stock of capital goods in the economy. Gross current investment, which includes these replacement expenditures, therefore does not equal the net gain in the stock of capital goods in the economy. Rather, it shows the gross amount of capital goods created in the current period, with no allowance for those which are used up in the current period. The *net increase* in capital goods (net current investment) would be measured by the investment expenditures over and above those required for replacement. Such net current investment expenditures are made by producers to create or extend productive capacity in anticipation of greater expenditures or in the light of technological change. Basically, a producer makes investment expenditures in the hope of future profits. He thinks that consumers' expenditures on the product will be such that he can produce and sell it at a margin of profit sufficient to compensate him for the risk and bother involved in the undertaking. A number of factors can produce such a situation. Consumers' expenditures on goods in general might be high. Their expenditures on a new type of product might be increasing. On the cost side, technical advance or other gains in productivity might produce such a fall in costs that it would be more profitable to produce increased quantities of the product at lower prices. Any or all of these things can create a situation favorable to investment expenditures.

**NET SALES ABROAD.** Net sales abroad constitute investment expenditures when they are positive and disinvestment when they are negative. If exports from the economy exceed imports into it, the economy is obtaining a claim on another country in exchange for goods and services. In a sense, this is investment in foreign countries; it is not a current expenditure for goods and services by anyone in the domestic economy. The foreigner who buys the goods is forced to borrow funds or use up past accumulations to purchase the net exports. When there are net imports into the economy, net sales abroad will be negative. This represents disinvestment, since goods have been supplied to the domestic economy over and above what the economy has currently produced. If the gross national product is to reflect only current production, such net imports must be subtracted out.

**CHANGE IN INVENTORIES.** The change in inventories also represents investment expenditure when inventories are increasing and disinvestment when inventories are decreasing. In a modern economy in-

ventories serve a definite function. Their size depends upon the conscious designs of producers; it is not simply the difference between what is produced and what is sold. Retailers and wholesalers need stocks of goods to carry out their business; the stock of goods on their shelves is as essential to them as any of the rest of their equipment. Producers similarly need stocks of raw materials and goods in process in order to carry out production. When inventories increase, the economy is holding more goods in the pipe line of production, and this pipe line is for producers a type of capital good of the same general nature as their buildings and machines. Producers whose inventories increase have incurred costs greater than those which appear as a part of the cost of the goods they have sold. These additional costs do not appear on their current income statements. (They will appear on the income statements when the inventories are again reduced through the sale of the goods.) For this reason they are expenditures on capital account. A decrease in inventories constitutes the reverse of this situation. Goods produced in the past are being used up in the present, and this is current disinvestment.

Gross current investment thus includes those elements of the national income and product account other than consumers' and government expenditures. Table 41 is a reclassification of the sources side of the national income and product account shown in Table 38 to show gross current investment.

*Table 41. National Income and Product Account, 1946*

*(In billions of dollars)*

Allocations		Sources	
Gross current business saving... ..	16.8	Sales to consumers.....	164.8
Payments to individuals.....	179.1	Sales to government.....	28.0
Payments to government.....	35.8	Gross current investment.....	38.9
		Sales to producers on capital	
		account.....	29.4
		Net sales to abroad.....	8.9
		Change in inventories.....	0.6
<hr/>		<hr/>	
Total charges against gross na-		Total sources of gross national	
tional product *.....	231.6	product *.....	231.6

\* Detail may not add to totals because of rounding.

THE SOURCE OF FUNDS FOR INVESTMENT. Gross current investment is made up of the expenditures for goods and services that are not made on current account. These expenditures do not come out of current income, and it is therefore necessary to examine the source of the funds with which they are made. The process of investment does not use up savings, since the amount of assets is the same after the purchase is made as it was before. The amount of cash, for example, might be lower, but the amount of equipment would be increased by an equivalent amount. For saving to have been used up, some type of consumption has to occur; but when an investment is made, there is no consumption. The supply of funds for investment expenditures, therefore, need not be drawn from the current saving of the economy but may come from a variety of other sources. Credit may be created to cover the investment expenditure: the banking system may have idle reserves, which it brings into use when funds are required for investment expenditure. Or firms may have idle balances of cash on hand, which they draw down to make capital outlays. These idle balances, furthermore, do not necessarily bear any relation to the saving that a firm has done in the past; it is possible for a firm that is making a loss (and so dissaving) to be in a highly liquid state, and similarly for a firm that is making and retaining huge profits (and so saving) to have practically no liquid funds. The firm that is making the loss may strive to maintain its liquidity by not selling on credit, by cashing in its securities, and by buying on credit rather than paying out cash. On the other hand, the firm whose assets are increasing faster than its liabilities may find that little or none of this increase in assets is in the form of cash. Other firms may owe it more money, or its inventories may have increased. For these reasons it would be naive to assume that in the complexities of the modern economy the cash which some people accumulate as saving is itself loaned out to those who wish to make investment expenditures. Current saving and the supply of funds available for investment expenditures are not necessarily directly related in this way; the link between current saving and current investment must be approached from a different direction.

In summary, then, every expenditure for currently produced goods and services can be classed either as an expenditure for consumption, which is made out of current income, or else as an expenditure for

nonconsumption purposes, which is made on capital account. Total gross national product is the total of these two types of expenditure.

### The Equality and Nature of Saving and Investment

Since gross current saving is that part of the gross national product which is not spent on consumption by individuals and the government and gross current investment is the amount of expenditures for gross national product over and above consumption, the two amounts are obviously identical. Both are equal to the amount of goods and services that are produced and not consumed, looked at from two different points of view. From the point of view of saving, what is produced and not consumed is the amount that the economy has refrained from consuming and so saved. From the point of view of investment, what is produced and not consumed is the amount of goods left over to be consumed in the future. It represents the economy's investment in goods available for future use. Saving and investment thus are always equal because they are one and the same. A saving and investment account to demonstrate this equality can be made up in terms of the previous tables. This has been done in Table 42.<sup>6</sup> On the left-hand

<sup>6</sup> It will be noted that the national income and product account, the personal income account, the government account, and the saving and investment account are, in fact, a complete set of sector accounts such as was described in greater detail in the appendix to Chap. 4. These accounts could be combined in the form of simplified input-output table such as has been described in Chap. 6, as follows:

	Producing sector	Government sector	House- hold sector	Capital sector	Total economy
Payments to producers.....	....	28.0	164.8	38.9	231.7
Payments to government.....	35.8	...	21.6	...	57.4
Payments to individuals . . .	179.1	16.1	...	...	195.2
Allocations to gross saving..	16.8	13.3	8.8	...	38.9
Total allocations... ..	231.7	57.4	195.2	38.9	

In this table, intrasector transactions are not considered; *i.e.*, current purchases by business from business are omitted. The row and the column for the household sector both add up to personal income, and the row and column for the business sector both add up to gross national product.



side is gross current investment as it was presented in Table 41. On the right-hand side the current saving items of the different sectors from Tables 38, 39, and 40 are listed. The totals for gross current investment and gross current saving are equal.

*Table 42. Saving and Investment Account, 1947*

*(In billions of dollars)*

Investment		Saving	
Sales to producers on capital account.	29.4	Gross current business saving .....	16.8
Net sales to abroad.. .....	8.9	Personal saving.....	8.8
Change in inventories.....	0.6	Government surplus *.....	13.3
Total gross current investment....	38.9	Total gross current saving.....	38.9

\* Because of the treatment of consumers' bad debts and subsidies minus current surplus of government enterprises noted above on p. 214, the government surplus shown here is lower than the government surplus shown in the appendix to Chap. 4 by \$0.8 billion and gross current business saving correspondingly is \$0.8 billion larger here than it should be. It will also be noted that the government surplus in Table 42 is treated as a savings item rather than an offset to gross investment, so that the totals of both sides of the account are larger by a corresponding amount.

The obvious equality of the concepts of saving and investment from the point of view of the economy as a whole, however, does not satisfactorily explain the whole situation. The decisions to refrain from consuming income and the decisions to make capital outlays on producers' durable goods are still made by different groups in the economy; it has not yet been explained why these two should coincide, since the supply of available funds for capital outlays is not necessarily related to current saving. To explore this relationship further, the processes of saving and investment must be studied in detail.

## THE PROCESSES OF SAVING AND INVESTMENT IN THE ECONOMY

### The Process of Saving

The processes by which the saving of individuals, producers, and the government are integrated into economic activity are all quite similar; the analysis that applies to the saving of one group is equally applicable to the saving of the other groups. Attention will therefore

be focused in this section only on the process by which individuals save and how this current personal saving affects the economy.

Since current saving is the difference between current income and current expenditure, it is obvious that current saving will be affected by either a change in income or a change in expenditures. When an individual receives an increase in income and his expenditures do not change, personal current saving will automatically increase by the same amount that income has increased. This repercussion of a change in income on saving is important, because it emphasizes that changes in current personal saving need not be entirely voluntary; they may occur simply because of changes in income to which an individual has not had opportunity to adjust. An increase of \$1,000 in an individual's income will increase his saving by the same \$1,000 until he has time to increase his current rate of expenditure. Similarly, a decrease in an individual's income would have the immediate effect of cutting his current rate of saving until he can adjust his current expenditures downward. Income changes will thus have immediate repercussions on current personal saving, and it is only by adjustment over a period of time that an individual can bring his expenditures into line so that his rate of saving is actually the rate he wants.

The current expenditures of consumers are a part of the current receipts of producers, so that any change in an individual's expenditures not only will change his own saving and consumption but also will affect the current receipts of producers. It has already been shown in Chap. 2 that every transaction has four aspects, two of them in the accounts of the buyer and two of them in the accounts of the seller. When an individual contracts his consumption in order to increase his current rate of saving, the reduction in his expenditures will show up not only in his own current accounts but also in the current accounts of producers. In order to show just how the current accounts of business will be affected, it will be necessary to be more specific with respect to the type of consumption that the individual cuts in his efforts to save more. For simplicity in the following treatment it will be assumed that there is no change in the government accounts. Then only the changes in the national income and product account and the personal income account need be examined.

**EXPENDITURES ON COMMODITIES.** When an individual contracts his purchases of commodities, sales of commodities will, of course, be

contracted simultaneously. Until producers have an opportunity to adjust their rate of production to this new situation, inventories in their hands will increase. In this instance, therefore the increased saving of the individual has had the simultaneous effect of increasing inventories, and this is a form of investment. This result is shown below in terms of changes in a simplified national income account and personal income account. The reduction in consumers' expenditures is assumed to be five units.

### National Income and Product Account

Allocations		Sources	
Gross business saving		Sales to consumers	—5
Payments to factors		Sales to government	
Payments to government		Gross investment	+5
Gross national product	—	Gross national product	—

### Personal Income Account

Allocations		Sources	
Personal taxes		Payments to factors	
Consumers' expenditures	—5	Nonfactor payments	
Personal saving	+5		
Personal income	—	Personal income	—

The reduction in consumers' expenditures appears both in the personal income account and in the national income and product account. Before producers can react by changing the level of their output and their payments to factors, goods will accumulate and inventories will increase by the amount of the reduction in consumers' expenditures. This increase in inventories appears as an increase in gross investment. Up to this point there has been no net change in gross national product (the market value of goods produced), and the allocations of gross national product have not changed. Personal income therefore has not changed. Since consumers' expenditures have fallen, more of personal income must have been retained as saving; this is shown in the personal income account. The accounts are therefore in balance, and

investment has increased (at least temporarily) as much as the increase in saving.<sup>7</sup>

This situation is not necessarily stable, however, since producers will probably want to make some adjustment to it. Inventories are now probably larger than the producers want them to be. They can be reduced to the previous level by either cuts in prices or cuts in production. In either case gross national product will fall as inventories are brought back to their previous level. There is now a smaller gross national product to be allocated, so that one or more of the specific categories of allocations must receive less. If the allocation to gross business saving is the one that is decreased, the drop in gross current investment would be exactly offset by this decrease in gross current business saving. If, on the other hand, factor payments are reduced, there will be an equal reduction in personal income; before individuals can adjust their expenditures to this new lower level of income, personal saving will automatically decrease by an amount that exactly matches the decrease in gross investment. This latter situation is shown at top of page 225.

<sup>7</sup> It would be possible to carry these transactions through in terms of changes in the simplified input-output table shown in the footnote on p. 220. The transactions would be represented as follows:

	Producing sector	Govern- ment sector	Household sector	Capital sector	Total economy
Payments to producers . . .	... ..	... ..	-5	+5	
Payments to government					
Payments to individuals					
Allocations to gross saving .....	... ..	... ..	+5	..	+5
Total allocations ....	... ..	... ..	... ..	+5	+5

The household sector has reduced its payments to producers (and increased its saving) by 5. This caused inventory accumulation of the same amount. As a result both saving and investment in the economy were increased by 5, and the totals of the other rows and columns remain unchanged.

**National Income and Product Account \***

Allocations		Sources	
Gross business saving		Sales to consumers	
Payments to factors	—5	Sales to government	
Payments to government		Gross investment	—5
	<u>      </u>		<u>      </u>
Gross national product	—5	Gross national product	—5

**Personal Income Account**

Allocations		Sources	
Personal taxes		Payments to factors	—5
Consumers' expenditures		Nonfactor payments	
Personal saving	—5		
	<u>      </u>		<u>      </u>
Personal income	—5	Personal income	—5

\* In the input-output table the transactions would appear as follows:

	Producing sector	Govern- ment sector	Household sector	Capital sector	Total economy
Payments to producers . . . . .	.....	.....	.....	—5	—5
Payments to government					
Payments to individuals	—5	.....	.....	.....	—5
Allocations to gross saving .....	.....	.....	—5	.....	—5
Total allocations. . . . .	—5	.....	—5	—5	—15

The repercussions could, of course, be traced still further. The reduction in personal income would probably lead some individuals to reduce their expenditures again, so that a new series of changes would be set in motion. This new reduction in consumers' expenditures will have an effect similar to that of the original reduction. Thus the original increase in saving by individuals has set in motion a series of reactions. Throughout this series of reactions, saving and investment have been shown to be always equal. The reactions resulted in a lowering of the value of total output in the economy, through the

successive adjustments of producers and consumers to the successive new situations in which they found themselves.

**EXPENDITURES ON SERVICES.** When an individual contracts his purchases of services rather than commodities, the initial reaction may be somewhat different. A decrease in expenditures on streetcar rides, for example, cannot produce an increase in inventories, since no inventoriable commodity is involved. Instead, there will be an immediate reduction in the amount of streetcar services sold and a corresponding immediate fall in the gross national product. On the allocation side there will probably be a decrease in gross current business saving, which will take place before streetcar companies can change the amounts they pay to the factors of production. This is shown below.<sup>8</sup>

### National Income and Product Account

Allocations		Sources	
Gross business saving	—5	Sales to consumers	—5
Payments to factors		Sales to government	
Payments to government		Gross investment	
	—		—
Gross national product	—5	Gross national product	—5

### Personal Income Account

Allocations		Sources	
Personal taxes		Payments to factors	
Consumers' expenditures	—5	Nonfactor payments	
Personal saving	+5		
	—		—
Personal income		Personal income	

The reduction in sales to consumers has caused a fall in the gross national product of an equivalent amount; and before payments to the factors of production can be adjusted, producers will have less left over in the form of business saving (undistributed profits in this case). Payments to the factors have not changed, and therefore personal income will not have changed. Personal saving must therefore have increased by the amount that consumers' expenditures have decreased. The decrease in gross business saving balances the increase

<sup>8</sup> The analysis can, of course, also be continued through the use of input-output tables. The mechanism is quite similar to that already given and therefore will not be continued here.

in personal saving, and total gross current saving remains unchanged. From this point on, reactions will be similar to those discussed above: the adjustment of business to the reduced purchases of consumers might involve a reduction of payments to the factors, and a continuous series of reactions might be set in motion.

An attempt by individuals to increase their saving will thus increase the total saving of the economy only as long as the involuntary accumulation of inventories by producers continues. As long as business does not want to increase the amount of its gross investment, attempts by individuals to save will eventually lead either to a reduction in the amount of gross business saving or else to a fall in the level of personal income. In the first case the increase in personal saving will be offset by a reduction in business saving. In the second case the fall in personal income will offset the cut in consumers' expenditures, so that the attempt to save will have been abortive for individuals as a group. An increase in saving by one individual, therefore, will not necessarily result in an increase in saving in the economy; it may only force someone else to dissave an equal amount.

### **The Process of Investment**

The investment expenditures for the economy that appear as a part of sales on the national income and product account are not necessarily the same as what an individual ordinarily considers to be investment expenditures. An individual considers that he invests when he purchases bonds or stocks; such a transaction is a transaction on capital account for him, but it is also a capital transaction for the person selling the bond. The purchase of the bond does not represent a current expenditure for the buyer, nor do the receipts from its sale represent current receipts for the seller. The transaction, therefore, does not enter the current accounts of the economy at all. Such investments by individuals are often only an interchange of claims to already existing assets. These transactions may prepare the way for the purchase of capital goods, but in and of themselves they are not in any way investment for the economy. Throughout the following discussion the term "investment" will be reserved for those purchases of capital goods, inventories, or net exports which do enter the national income and product account as part of the expenditures for gross national product.

Investment for the economy has been defined as that part of current production which is purchased for purposes other than current con-

sumption. It follows from this definition that an increase in the rate of investment can come about only through an increase in expenditures for current output aside from the current consumption expenditures made by individuals or the government. With an increase in such expenditures it can be shown that either a saving or a disinvestment of equal amount will result.

An increase in the purchases of producers' durable goods may have the immediate effect of removing more goods from the inventories of the dealers in such equipment. The increase in investment represented by the increased purchase of durable goods is thus offset by the simultaneous decrease of the same amount in the sellers' inventories; thus, the new investment is temporarily balanced by an equal disinvestment on the part of the sellers of producers' durable goods. But such disinvestment on the part of the sellers is involuntary, since it will reduce their stocks below the level they prefer. They will therefore either raise their prices or increase their output in order to regain the inventory position that they want. In either case the result will be an increase in the value of total output in the economy, so that the gross national product will increase. This is shown below.

#### National Income and Product Account

Allocations		Sources	
Gross business saving	+1	Sales to consumers	
Payments to factors	+4	Sales to government	
Payments to government		Gross investment	+5
	<hr/>		<hr/>
Gross national product	+5	Gross national product	+5

#### Personal Income Account

Allocations		Sources	
Personal taxes		Payments to factors	+4
Consumers' expenditures		Nonfactor payments	
Personal saving	+4		
	<hr/>		<hr/>
Personal income	+4	Personal income	+4

In this particular example it was assumed that the increase in the value of production in the economy resulted partly in an increase in payments to the factors of production and partly in an increase in



undistributed profits. If the assumption that the government account remain unchanged were relaxed, a part of the increase could have been shown as an increase in tax receipts. However the increase is allocated, the net change in the total gross current saving of the economy will exactly match the net change in gross investment. After the initial transaction has taken place, there will undoubtedly be further adjustments as the various sectors attempt to adjust to the new situation in which they find themselves. Individuals who find themselves with additional income may decide to increase their expenditures, and this reaction can be traced through in all its detail in the relevant accounts in the economy. Each attempt by one group in the economy to adjust to increased income will alter the position of others and induce them, in turn, to make further changes. As this process continues, the level of gross national product will be forced upward by the continuous increase in expenditures.

The increase in expenditures on capital goods need not always have its effect through involuntary changes in inventories. Instead it may directly increase personal income. This would occur, for instance, if the increase in expenditures took the form of new construction. As the expenditure on new construction is made, the personal income of the workers in the industry and the gross national product will increase simultaneously. Until the workers have a chance to spend their new pay checks, their current saving will be increased by the exact amount of the new investment. The subsequent reaction of the construction workers to their new level of income will cause additional consumption expenditures, and another chain of adjustments will be set in motion.

An increase in the rate of current investment thus will give rise to a cumulative increase in the level of gross national product. Similarly, a decrease in the rate of current investment can be shown to lead to a cumulative fall in the level of gross national product. There are a number of factors in the economy that will influence the cumulative movements set up by changes in current saving and investment. Some of these factors will reinforce the movements upward or downward, and others will tend to limit the changes in gross national product. An understanding of the changes in the level of activity in the economy will require an examination of these factors and an analysis of the meaning of equilibrium in the economy. These questions will be examined in the following chapters.

## SUMMARY

The different sectors of the economy will react differently to changes in the level of economic activity. The agricultural industries, for example, will maintain a constant level of output, letting prices fall or rise until the same quantity will be bought. Some manufacturing industries, on the other hand, may more nearly maintain the prices of their products, and contract or expand output to the amount that can be sold at the going price. In either case a contraction of expenditures will mean that the level of gross national product will fall, and an expansion of expenditures will mean that the level of gross national product will rise. Inventories ordinarily will not take up the slack.

An examination of the expenditures for gross national product in the economy reveals that these expenditures are either consumption expenditures on current account on the part of individuals and the government or else capital expenditures on the part of producers. Current saving for the economy is the difference between the total production and total consumption: what is produced and not consumed is what the economy saves. Current investment for the economy is that part of production which is not consumed but instead is set aside for future use. It is apparent that, defined in this way, savings and investment are one and the same.

In spite of this identity of saving and investment, however, the groups in the economy that refrain from spending, *i.e.*, that save, are not necessarily the same as the groups that make investment expenditures. Saving is done by business, by individuals, and by the government when they refrain from spending on current account all that they receive as income. The total gross current income of all these groups is equal to the total expenditures for current output in the economy—in other words, the total of the national income and product account. Their savings—gross current business saving, current personal saving, and the current government surplus or deficit—will together constitute the gross current saving of the economy. If any one of these groups alters the relation of its current expenditures to its income, the gross current saving of the economy will change. Similarly, any increase in the income of a group will automatically increase its current saving until an adjustment of current expenditure can be made.

Current investment, on the other hand, consists of the purchase of producers' goods on capital account, the change in inventories, and net sales to foreign countries. These represent the production of the economy which does not enter into consumption. An increase in inventories will be current investment, and a decrease will be disinvestment. Similarly, net sales to foreign countries will be investment, whereas net purchases from foreign countries would be disinvestment.

Any attempt to change either current saving or current investment in the economy will change the level of gross national product. An attempt to change current saving will be balanced either by a simultaneous equal investment or by a simultaneous equal dissaving. This investment or dissaving will be involuntary and will ordinarily therefore be only temporary. As the groups that find themselves investing or dissaving adjust to this situation, they in turn will alter the position of still other groups in the economy. As these in turn change their expenditures to conform with the changing conditions in which they find themselves, gross national product (the total of these expenditures) will also be changing. Thus, not only will an attempt to change either saving or investment in the economy give rise to balancing items in other parts of the economy, but also the process of adjustment to the new situations will cause a cumulative change in the level of gross national product.

The study of the basic concepts of income analysis thus leads to the conclusion that changes in the level of gross national product are brought about by changes in either the desire to save or the desire to invest in the economy. An attempt to save less or to invest more will produce a cumulative rise in gross national product, whereas an attempt to save more or to invest less will drive the economy into a cumulative fall. The rise and fall of economic activity can in this way be traced to the changes that take place in the desire to save and invest.

## 10. The Mechanism of Income Analysis

The previous chapters have shown that the level of activity in the economy depends upon the desire to save and the desire to invest, but the exact process by which the level of gross national product is determined still remains to be analyzed. It has been shown that an attempt to change the level of gross current saving or investment can start a cumulative change in the level of gross national product, but this explanation is incomplete until the limits of the cumulative movement are determined. This latter problem is complicated by the fact that both the desire for current saving and the desire for current investment are themselves highly related to the level and the rate of change of gross national product. The process of cumulative adjustment initiated by a change in the desire to invest or save, therefore, will itself have repercussions upon that desire to invest or save. The first step in unraveling these relationships must be an attempt to understand what determines the desire to save and the desire to invest.

It should be emphasized once more that the purpose of this analysis is not to determine causes or to predict the future course of events but rather to bring about an understanding of the mechanism by which change takes place. It frequently is not possible to determine exactly what repercussions a given event will have. It is possible, however, to discuss the process of change in terms of specific elements and the factors that bear upon them, breaking the total process down into its component parts. For example, a rise in wages would lead producers to expect higher prices, but at the same time it would raise their costs. Just exactly how they would behave in such a situation cannot be determined empirically. But the repercussions that would follow each

of the possible reactions of producers can be traced. Income analysis cannot in this case choose between the possible responses of producers, but given their behavior it can lay bare the mechanism by which the change will be integrated into the economic system.

### THE DETERMINANTS OF SAVING IN THE ECONOMY

#### **Current Personal Saving in the Economy and the Distribution of Income**

Current personal saving, gross current business saving, and government surplus or deficit constitute the gross current saving of the economy. The first of these, current personal saving, depends upon the decisions of individuals as consumers to refrain from expenditure. As a starting point in explaining total gross current saving, therefore, it may logically be asked what determines how much of his income an individual will consume. A good deal of light can be thrown upon this question by the examination of consumer budget data. Table 43 shows how consumers with different levels of income spent these incomes in the year 1935 to 1936; it covers all the forty million families in the country. It is quite evident that families receiving low incomes saved a different amount from families with higher incomes. Those receiving \$2,000 a year or less (two-thirds of the forty million) paid out as a group more than they received as income. On the average, therefore, more than two-thirds of the families in the United States were dissaving. Families with incomes higher than \$2,000 did all the current personal saving carried out by individuals in the economy, and the current personal saving of those receiving incomes above \$15,000 amounted to almost half of the total. Of all the families in the United States, 99.5 per cent had incomes of less than \$15,000, so that less than 1 per cent of the families in the country were currently doing half of the total current personal saving.

Table 43 illustrates vividly that the amount of income which individuals receive is a very important factor in determining how much they will save, and it is a useful generalization to observe that individuals with higher incomes save more than individuals with lower incomes. This generalization can be framed in a slightly different form by saying that although individuals with higher incomes have more money to spend, they do not use all this extra money for the purchase

Table 43. Consumers' Income and Expenditure, by Income Group, 1935-1936\*  
(Dollar items in millions)

Income group	Number of families, thousands	Personal income	Personal taxes †	Disposable income	Consumption expenditures	Current personal saving	Consumption expenditures as a per cent of disposable income
Under \$780.....	13,153	\$ 6,190	\$ 171	\$ 6,019	\$ 7,226	-\$1,207	120.1
\$780-\$1,450.....	13,153	14,154	516	13,638	13,890	-252	101.8
\$1,450-2,000.....	5,974	10,035	409	9,626	9,164	462	95.2
\$2,000-3,000.....	4,434	10,577	465	10,112	9,043	1,069	93.3
\$3,000-5,000.....	1,818	6,644	343	6,301	5,125	1,176	81.2
\$5,000-15,000.....	749	5,839	413	5,426	3,529	1,897	65.0
\$15,000 and over.....	178	5,820	750	5,070	2,237	2,833	44.1
Total.....	39,458	\$59,259	\$3,067	\$56,192	\$50,214	\$5,978	89.4

Percentage Distribution						
Under \$780.....	33.3	10.4	5.6	10.7	14.4	-20.2
\$780-\$1,450.....	33.3	23.9	16.8	24.3	27.7	-4.2
\$1,450-2,000.....	15.2	16.9	13.3	17.1	18.3	7.7
\$2,000-3,000.....	11.2	17.9	15.1	18.0	18.0	17.9
\$3,000-5,000.....	4.6	11.2	11.2	11.2	10.2	19.6
\$5,000-15,000.....	1.9	9.9	13.5	9.7	7.0	31.8
\$15,000 and over.....	0.5	9.8	24.5	9.0	4.4	47.4
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

\* National Resources Committee, *Consumer Expenditures in the United States. Estimates for 1935-36*, p. 48, 1939.

† Includes some gifts.

of consumers' goods. Individuals with higher incomes tend to have a larger absolute amount of saving than those with lower incomes, and in Table 43 even the relative amount saved is greater for the high-income groups than it is for the low-income groups. Families with incomes of \$780 or less in 1935 to 1936 on the average spent 120 per cent of their disposable incomes, whereas families with incomes of \$15,000 and over spent only 44 per cent of their disposable incomes.

### The Propensity to Consume for Individuals

This relationship between the level of income and the amount of consumption expenditures by individuals is extremely important in explaining the mechanism of income analysis. For this reason it will be useful to develop the concept of the propensity to consume. The propensity to consume can be defined as the schedule showing the amount of his income that an individual will *spend* at various different income levels.<sup>1</sup> Knowledge of an individual's propensity to consume will, of course, simultaneously reveal the amounts that he will be willing to *save* at these different income levels. No two individuals can be expected to have identical propensities to consume. Just because two individuals receive the same income and spend the same amount is no indication that they would continue to react identically at other levels of income; more likely, were they both to receive equal increases in income, their reactions would be different. An individual's propensity to consume may be said to change whenever there is a change in any part of the schedule. For example, a change in family size or in the age of the children in the family would undoubtedly alter the family's propensity to consume. When the family is small or the children are young, the amounts that would be spent at various

<sup>1</sup> In economic literature, the term "propensity to consume" has been used to mean many different things. Some economists have used it to refer to the percentage of their incomes that individuals spend; any change in the percentage spent would thus be a change in the propensity to consume. Others have used it to refer to the relation between total consumers' expenditures and personal income and have introduced the marginal propensity to consume as the amount of the increase or decrease in expenditure that will result from a given change in personal income. In order to obtain some degree of consistency, however, it is thought best to adopt a definition that will refer to the functional relation existing between an *individual's* income and his consumption expenditures.

levels of income would be quite different from the amounts that would be spent when the family is larger or the children older.

Although little or no empirical evidence exists about the exact form of propensity to consume schedules for specific individuals, it is usually assumed that as the level of an individual's income increases, his consumption expenditures will not increase as fast. In other words, an individual's current saving in absolute terms will be larger when he has a high level of income than it will be when his income is at a lower level. The logic upon which this assumption is based is simple: when an individual receives an increase in income, he will be able to divide this increase in income between spending and saving; he will increase his current expenditure somewhat, but he will probably also increase his current saving (or decrease his current dissaving). Similarly, an individual who receives less income will decrease both his current spending and his current saving in order to be able to live within his lower income. Table 43 demonstrates that this relation of saving to income is true for different individuals receiving different incomes, but it does not show that it would also be true for the same individual at different income levels. It obviously will have certain exceptions for specific individuals, but it is believed to apply to most individuals.

The fact that an individual who received \$2,000 ten years ago saved more out of this income than he saves out of \$5,000 today is no disproof of this assumption about the propensity to consume. To disprove it, it would be necessary to show that the individual's saving would have been smaller than it actually was had he received \$5,000 ten years ago instead of \$2,000 and similarly that his current rate of saving would increase if today he were to receive \$2,000 instead of \$5,000. There are many reasons why individuals may save less at one time than they did at another even though their income may have increased. Prices may have gone up, the amount of savings that individuals have accumulated may have increased, or the standard of living that they are trying to maintain may have risen; all these would cause a change in their propensity to consume schedules, so that the observed change in an individual's saving frequently is more the result of forces that change the propensity to consume than of the shape of the schedule itself. The pattern of saving that has taken place during the history of the economy illustrates well such shifts in



the propensity to consume schedules of individuals. It is probably true that the majority of people today are receiving far more real income than their ancestors did, yet they consume a much higher proportion of this real income. An individual's propensity to consume is greatly influenced by many factors in the culture, and in no two periods of history will people be subject to identical forces. For short periods of time with no great change in the economic and social setting, however, individuals' propensities to consume are relatively stable. Under these conditions an increase in an individual's income will tend to increase the amount he wants to save as well as increasing his ability to spend, and a decrease in his income will decrease the amount he wants to save as well as decreasing his ability to spend.

### The Consumption Function for Consumers as a Group

Having postulated the relation between an individual's consumption and his income, it is natural to ask about the relation between total consumers' expenditures and total disposable income in the economy. Empirically this relation can be found for any year by looking at the personal income account. Chart 10 shows total disposable income and total consumers' expenditures for the period 1929 to 1947.

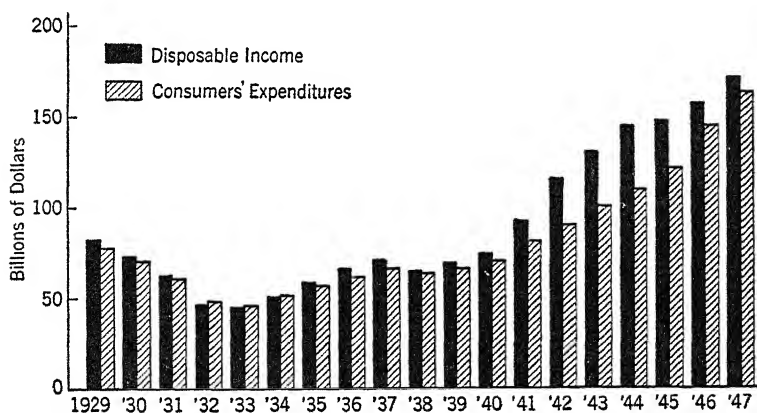


Chart 10. Disposable income and consumers' expenditures 1929-1947. (Source: Department of Commerce, National Income Division.)

From this chart it seems to be true that the higher the level of disposable income the greater the amount of personal saving. Many economists have attempted on the basis of the empirical data to establish a relationship that will give the amount of personal saving that

can be expected in the economy for different levels of disposable income. One of the most usual procedures in such analysis is to plot the data showing the amount of consumers' expenditures that have been made at different levels of disposable income in the form of a scatter diagram. This has been done in Chart 11.

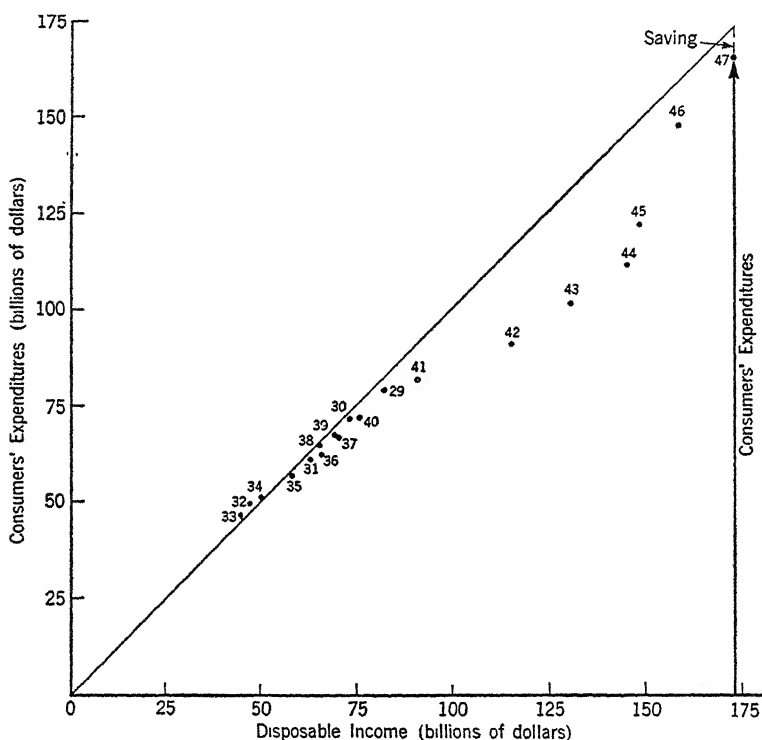


Chart 11. Disposable income and consumers' expenditures 1929-1947. (Source: Department of Commerce, *National Income Division*.)

Some explanation of the mechanics of this chart is in order. The level of disposable income is measured in the horizontal direction, and the level of consumers' expenditures is measured in the vertical direction. The data for 1947, for instance, can be plotted by measuring along the horizontal base line to \$173.6 billion, the amount of disposable income in 1947 and then erecting a perpendicular at this point to the height of \$164.8 billion, the amount of consumers' expenditures. This procedure is shown in Chart 11. For the other years only the points are plotted; the lines of consumers' expenditures are

not drawn. The diagonal line on the chart has been drawn in as a guide line to show the points where the horizontal and vertical distances are equal. If disposable income and consumers' expenditures were exactly equal, the plotted point would fall on this diagonal. For

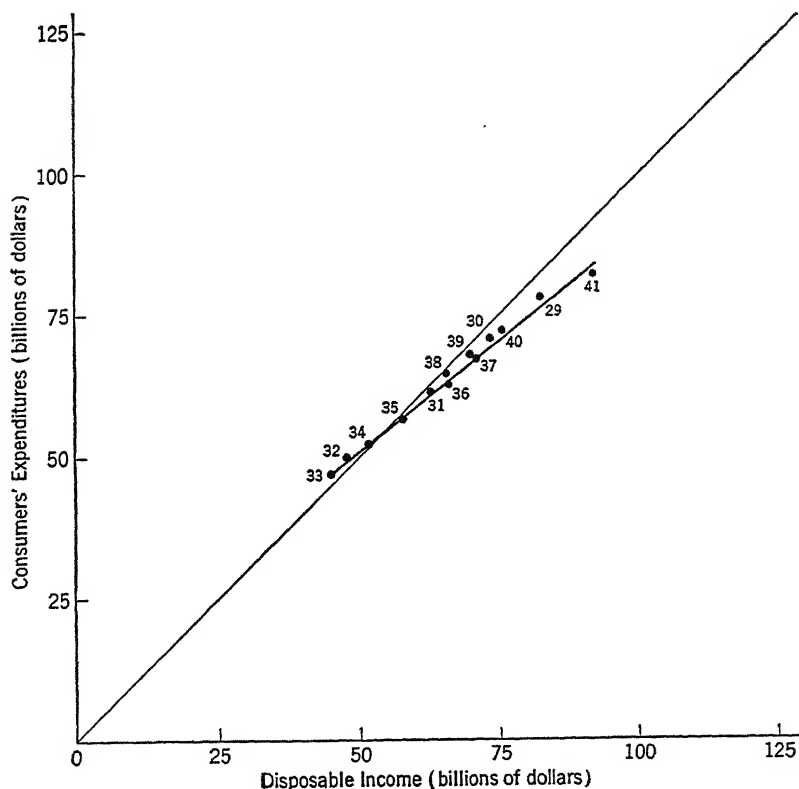


Chart 12. Disposable income and consumers' expenditures 1929-1941. (Source: Department of Commerce, National Income Division.)

1947 it will be noted that the plotted point fell considerably below the diagonal line. This means that consumers' expenditures were less than disposable income. The vertical distance from the plotted point to the diagonal line (shown by the dotted line) represents the amount of personal saving; it amounted to \$8.8 billion (173.6 minus 164.8) in 1947. The point for 1934, in contrast, lies almost on the diagonal line. In this year disposable income and consumers' expenditures were almost equal, so that personal saving was nearly zero. For the years

1932 and 1933 the points lie distinctly above the diagonal. Disposable income in these years was actually smaller than consumers' expenditures, so that saving was negative. The vertical distance *above* the diagonal shows the amount of *dissaving* by individuals as a group.

From Chart 11 it becomes obvious that saving was much greater during the war than after it, in spite of the fact that disposable income was larger in the postwar period. This situation has generally been attributed to a shift in people's attitude toward saving. During the war the amount of saving was unusually high, both because of the scarcity of goods and because of the government's program of stimulating saving by selling war bonds. For this reason, the war period has generally been excluded when attempts have been made to analyze the relationship between disposable income and consumers' expenditures.

The period from 1929 to 1941 appears to indicate the existence of a more general relationship between the level of disposable income and the amount of consumers' expenditures. A straight line can be drawn almost through the points that have been plotted. Such a line has been drawn in Chart 12.<sup>2</sup>

<sup>2</sup> This line is the regression line of best fit. A straight line has been fitted in this particular case; it does not necessarily follow that a straight line is best for all cases. Furthermore, no such line should be considered to apply over a range greater than that represented by the points to which it is fitted; the line should not be extended either upward or downward. Fitting a line such as this to the data is objectionable on a number of grounds, but it does serve to emphasize some important points. In the first place it seems to be true that the larger the disposable income of individuals the greater (as a group) their current personal saving has been. But, and this is more important, the computed relationship does not hold exactly for all the years to which the regression line is fitted. Attempts have frequently been made to refine and adjust the data in order to obtain a regression line that fits better. In most cases the process of obtaining a more adequate fit has involved the introduction of additional variables or special explanations of why particular years are not "normal." For example, it will be noted that the points which lie above the regression line generally refer to periods when income was declining whereas those which are below the regression line are more apt to represent years in which income was increasing. This might logically be expected if people had difficulty adjusting their standards of living downward in a depression and/or did not react immediately to increase their expenditures when their incomes rose. Diligent rationalization or the experimental

The line that has been drawn in Chart 12 is often referred to as the consumption function. Assuming this line to be an adequate guide to consumers' expenditures, it can be used to indicate the amount that people can be expected to spend for any level of disposable income.

adding of variables can always lessen the discrepancy between the consumption function and actual consumers' expenditures, but this procedure is not necessarily very helpful for explaining the relation that may occur between disposable income and consumers' expenditures in the future. Furthermore, the national income statistics themselves are estimates and as such as subject to error, so that the discrepancies which are being eliminated may be different from those which actually exist. The data without any adjustments reveal quite a close relationship between disposable income and personal consumption, but it is not close enough so that anything can be predicted from it with respect to saving beyond a very general indication of magnitude. The table below shows the difference between actual current personal saving and current personal saving as estimated from the computed relation for the years 1929 to 1941.

	Actual current personal saving	Current personal sav- ing as estimated from the regression line of best fit
1929	\$3.7	\$5.6
1930	2.9	3.9
1931	1.8	1.8
1932	-1.4	-1.1
1933	-1.2	-1.6
1934	-0.2	-0.4
1935	1.8	0.9
1936	3.7	2.4
1937	3.9	3.4
1938	1.0	2.3
1939	2.7	3.2
1940	3.7	4.3
1941	9.8	7.4

Source: Computed from data in "National Income," supplement to *Survey of Current Business*, July, 1947, p. 19, U.S. Department of Commerce.

It is apparent from this table that the change in saving resulting from a given change in disposable income cannot be estimated very accurately from this com-

At any level of disposable income this amount can be estimated by the length of the perpendicular from the base line to the consumption function. The consumption function is thus a schedule of how much individuals as a group may be expected to spend at different levels of disposable income.

THE DISTRIBUTION OF INCOME AS RELATED TO THE CONSUMPTION FUNCTION. From the data presented in Table 43 it is apparent that any change in the distribution of personal income among individuals would probably cause a change in the total amount of personal saving which would accompany a given level of disposable income in the economy. If income were taken from the upper income groups, for example, and given to the lower income groups, current personal saving would probably decrease: the lower income groups would probably spend more of this income than the upper income groups had. Conversely, if the income of the lower income groups is decreased and that of the upper income groups increased by the same amount, current personal saving would probably increase. For this reason the way in which income is distributed among individuals is an important factor in determining the amount of saving. With different distributions of income different amounts of saving would accompany the same level of disposable income. This idea is represented graphically in Fig. 2.

The point *X* on this diagram represents the amount of consumers' expenditures that would accompany a given level of disposable income

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puted relation. For example, in 1937 disposable income was \$71.1 billion, and in 1938 it was \$65.5 billion. According to the consumption function (the fitted regression line), a decrease in current personal saving of \$1.1 billion would have been expected to accompany this change in income. Actually, however, saving decreased by \$2.9 billion in this period, from \$3.9 billion to \$1.0 billion.

The reasons for the failure of the computed consumption function to explain fully the changes that take place in current personal saving may be divided into two general groups: changes in the distribution of disposable income among individuals and changes in the propensities to consume of individual consumers. Were it not for changes either in the income distribution or in individuals' propensities to consume, a consumption function could be fitted to the data that would truly represent the relationship between disposable income and consumers' expenditures, *i.e.*, all the points in Chart 12 would lie on the regression line. Either of these types of change, however, can shift the consumption function from year to year, so that no one relation can be computed for the whole series of years.

for one specific income distribution. Point *Y*, below point *X*, shows the amount of consumers' expenditures that might result if the distribution of income existing at *X* were altered by taking income away from the lower income groups and giving it to the upper income groups. Under such circumstances it is reasonable to assume that the lower income groups would be forced to reduce their consumption. The

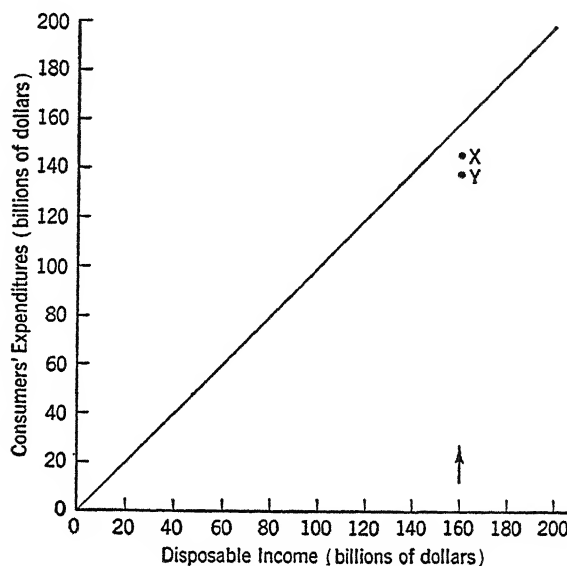


Fig. 2.

upper income groups might increase their consumption somewhat, but they would probably save more of this income than the lower income groups had. Therefore total consumers' expenditures accompanying this level of disposable income would be reduced by the redistribution of the income. This is another way of saying that the amount of consumers' expenditures which can be expected with a given level of disposable income will in large part depend upon the way in which that income is distributed among individuals.

By extending this argument to apply to more than one level of disposable income, it can be demonstrated that a different consumption function must exist for each different type of income distribution. This is shown graphically in Fig. 3.

Line Y on this chart would represent the consumption expenditures to be expected at different levels of disposable income with a distribution of income that probably would be somewhat more equal than that represented by line X. There is, of course, no reason why the consumption functions that would accompany the different income distributions should be parallel. Two different types of income distribution might yield the same amount of consumers' expenditures at one

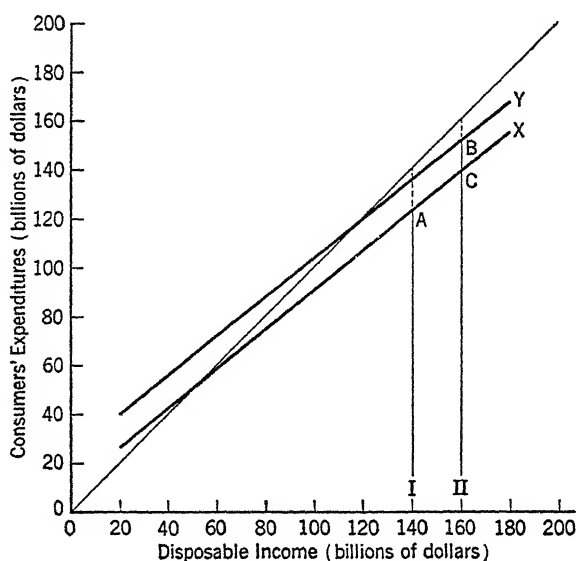


Fig. 3.

level of disposable income and different amounts of consumers' expenditures at other levels of disposable income. The consumption functions might then actually cross each other.

An increase in the level of income without any change in the relative distribution of income would be equivalent to moving along the particular consumption function, but a change in the type of income distribution would be equivalent to moving to a different consumption function. A change in the level of disposable income in the economy may also change the distribution of income, so that the point which is finally reached is not only at a different level of income but also on a new consumption function. In terms of Fig. 3, for example, the economy may start out at point A, at a given level of income and with a



particular income distribution. As the level of income changes, the distribution of this income may also shift, and consumption expenditure at the new level of income will fall on a new consumption function at point *B* instead of at point *C* where it would have been if the income distribution had not been changed.

In actual practice it has been found that over short periods of time the distribution of income in the economy is relatively stable, so that the consumption function applicable to one year will not for this reason differ greatly from that for the next. Yet between longer periods of time or during periods of violent change, differing income distributions may well cause consumers' expenditures to fall on different consumption functions.

THE PROPENSITY TO CONSUME AS RELATED TO THE CONSUMPTION FUNCTION. Differing income distributions are not the only force that will lead to the existence of different levels of consumers' expenditures for the same level of disposable income; changes in the propensities to consume of individuals can also lead to this result. Figure 2 will illustrate this situation if each point on it is considered to represent the consumption expenditures that would result from a particular combination of propensities to consume. A change in an individual's propensity to consume changes the relation between his disposable income and his consumption expenditures; if this happens simultaneously for a number of individuals, the total amount of consumers' expenditures relative to total disposable income in the economy will also shift. For this reason changes in individuals' propensities to consume in the economy that affect consumers' expenditures will result in changes in the consumption function. Figure 3, therefore, represents differing consumption functions that might result from changes in the propensity to consume as well as from changes in the distribution of income.

During World War II many forces were operating to change both the propensity to consume of individuals and the income distribution, and the consumption function for the economy shifted violently. Chart 11 shows that consumers' expenditures relative to disposable income were very much lower during the period from 1942 to 1945 than they might have been expected to be on the basis of prewar experience. Because of rationing and the shortages of consumer goods individuals found it difficult to buy the quantities of goods that, with

their wartime incomes, they would have liked to buy. In ordinary circumstances prices of consumers' goods would have risen until at the new prices the total quantity of goods available would have exactly equaled the amount that consumers wished to spend, but during the war such price rises were prevented by price controls. Consumers therefore were led to save a larger portion of their incomes than they otherwise would have. Furthermore, great efforts were made during this period to induce individuals to increase their savings in the form of war bonds. The consumption function therefore shifted downward. After the war the consumption function continued to shift under the impact of changes in surrounding circumstances. Consumers' goods that had been scarce became more plentiful, soldiers who were discharged from the army had to buy civilian clothes, and many similar postwar adjustments took place. The consumption function in the postwar economy has not returned to its prewar position, since there are many significant differences between the two periods. During the war individuals accumulated an extremely large amount of savings, which may change their attitude toward expenditure during the postwar period. On the other hand many individuals are faced with the fact that prices are rising and their own incomes are not. These together produce changes in their propensities to consume and alter the consumption function for the economy.

The stability of the consumption function is to a very large extent dependent upon the stability of the propensities to consume of individuals. Anything that alters the latter will alter the consumption function based upon them; and for this reason whenever the consumption function is used to predict the level of consumer expenditures that will accompany a given level of disposable income, close attention must be given to the possibility of changes in the propensities to consume of individuals.

### **The Theory of the Multiplier**

The consumption function for the economy is one of the key elements in the mechanism of income analysis. But since it is only one such element, certain simplifying assumptions are necessary in order to demonstrate its role. Only after other important factors such as gross business saving, government surplus or deficit, and investment have been discussed can the whole mechanism be fully understood.

For the present, in order to demonstrate the role of the consumption function alone, two assumptions will be made; these will later be removed, so that the operation of the mechanism under more realistic conditions can be presented. These two assumptions are, *first*, that throughout the process of adjustment both gross business saving and the government surplus or deficit<sup>3</sup> will remain unchanged and, *second*, that the level of investment will not react to any changes which take place.

In this situation it is useful to ask what will be the chain of repercussions and what will be the final effect upon the level of income of an arbitrary change in the level of investment. It has already been shown that if business saving and the government surplus or deficit remained constant, an increase in the level of investment expenditures would cause an immediate rise in personal income of equal amount and simultaneously an equal involuntary increase in current personal saving. As soon as they could, individuals would attempt to adjust their expenditure to this new level of income. When this happens, an apparent paradox appears. An increase in consumers' expenditure, it would seem, would decrease the amount of current personal saving that is taking place. But in this particular circumstance this will not happen. As long as the two simplifying assumptions that have been adopted hold, any increase in consumers' expenditures will result in an immediate and equal increase in consumers' income. Since investment, business saving, and the government surplus or deficit are assumed to be unchanged by any change in consumers' expenditures, the transactions by which individuals increase their current expenditures must also appear in the current accounts of other individuals, as income. The more people as a group spend, therefore, the more (by exactly the same amount) they will receive as income. The gap between their incomes and their expenditures cannot be changed by the process of increasing spending—and this gap is, of course, current personal saving. No matter how hard individuals may try, in this simplified situation they cannot as a group change the amount of their current personal saving. The more they spend the more income they will have, and the absolute amount of current personal saving will remain the same. In terms of the accounts developed in the pre-

<sup>3</sup> It is assumed that both government receipts and government outlays remain constant, not simply that the difference between them is constant.

ceding chapter the adjustment of individuals by increasing their expenditures would appear as follows.

### National Income and Product Account

Allocations		Sources	
Gross business saving		Sales to consumers	+5
Payments to factors	+5	Sales to government	
Payments to government		Gross investment	
Gross national product	+5	Gross national product	+5

### Personal Income Account

Allocations		Sources	
Personal taxes		Payments to factors	+5
Consumers' expenditures	+5	Nonfactor payments	
Personal saving			
Personal income	+5	Personal income	+5

The adjustment of consumers' expenditures would not only increase consumers' expenditures in the personal income account but also increase sales to consumers in the national income and product account. Since one of the two basic assumptions was that investment does not react to consumers' expenditures, it follows that gross national product must increase by an equal amount. On the allocation side of the national income and product account, it has been assumed that neither gross business saving nor payments to the government can change, so that payments to the factors must be the element that changes. Payments to factors must then be increased in the personal income account, thus increasing the total of personal income. Since personal income has increased by exactly the same amount that consumers' expenditures originally increased and personal taxes do not change, there is obviously no change in personal saving.

It does not follow, however, that in response to an arbitrary increase in investment individuals will continue to increase their expenditures (and so their incomes) indefinitely. Although consumers cannot change the absolute amount of their current personal saving, the change in their incomes will change their *desire* to save. As their

incomes rise, individuals as a group will be willing to save a larger absolute amount. The actual saving that they are doing will remain the same, but a larger part of it will be voluntary, and a smaller part will be involuntary. Eventually, a level of income will be reached at which all of individuals' saving is voluntary; at this level of income the actual amount of current personal saving is exactly what individuals want it to be. When this point is reached, individuals will no

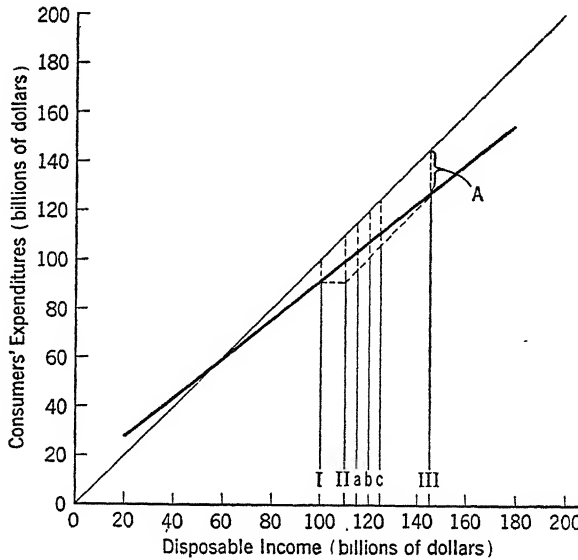


Fig. 4.

longer try to increase their expenditures, since they are spending and saving in exactly the proportions they prefer. When expenditures stop increasing, personal incomes will also stop rising and the series of repercussions will come to an end. Throughout the whole process the actual amount of current personal saving has changed only once, in response to the initial increase in investment expenditure. The chain of reaction comes to an end, not when consumers adjust their saving to the level they wish, but rather when their incomes have risen to the point where they are satisfied to continue the amount of saving they are doing.<sup>4</sup> Diagrammatically, this is shown in Fig. 4.

<sup>4</sup> In this situation it is implicitly assumed that with the rise in disposable income prices will not change enough to bring about a change in the consumption function.

The situation that exists before the arbitrary increase in investment is shown in position I on the chart. Consumers' expenditures, it will be noted, fall on the consumption function; for the level and distribution of income and the propensities to consume existing in the economy consumers are saving exactly what they want to. Immediately after investment is increased, the situation will be that shown as position II. The disposable income of consumers has been increased by the increased investment, but they have not had an opportunity as yet to change their expenditures. Expenditures therefore remain at their previous level, and saving increases by the amount of the increased income. In the process of adjustment that follows (positions IIa, IIb, and IIc) the increase in consumers' expenditures always results in an immediate increase in personal income, so that the absolute amount of current personal saving (*A*) remains the same. The dotted line shows the path of adjustment. Since for every increase in the vertical direction (consumers' expenditures) there will be an equal increase in the horizontal direction (disposable income), the path of adjustment will be a line parallel to the diagonal. The vertical distance between the diagonal and the line showing the path of adjustment (personal saving) must at all times remain the same, since the two lines are parallel. The vertical distance between the dotted path of adjustment and the consumption function shows the involuntary saving that exists.

Gradually, the process of adjustment will raise disposable income to a point on the consumption function where the amount *A* will be saved by individuals voluntarily; this is the point where consumers' expenditures once more lie on the consumption function. The economy is then dividing its income as it wishes between saving and expenditure, and no further adjustment is necessary. The amount by which income must rise before such an equilibrium position is reached obviously will depend upon the shape of the consumption function. If the consumption function is nearly parallel to the diagonal, a considerable rise in disposable income may be necessary before individuals will voluntarily save what is required of them by the economy. On the other hand, if the consumption function diverges rapidly from the diagonal, only a small increase in income need occur before individuals will voluntarily save the necessary amount.

An arbitrary decrease in investment will lead to a similar chain of

reactions in the opposite direction. The decrease in investment, under the simplifying assumptions made above, will produce an equal decrease in disposable incomes. Until consumers have a chance to adjust their expenditures, current personal savings will necessarily decrease (or current personal dissavings increase). Individuals will then cut their expenditures in the attempt to bring their savings back up

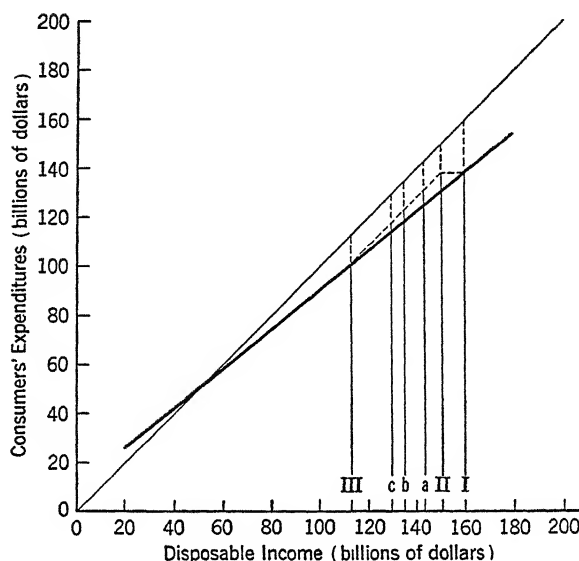


Fig. 5.

to the level they want, but this cut in expenditures will have the effect only of decreasing incomes once more, so that saving of the group as a whole will not change. This process will continue until incomes have fallen to the point where the actual amount of saving being done is all that individuals want to do; at this point the chain of reactions will cease. Figure 5 illustrates this process.

Position I again shows the situation before the change in investment; consumers' expenditures lie on the consumption function. The situation immediately after the cut in investment is shown in position II. Incomes have fallen, but consumers' expenditures remain unchanged; the decrease in incomes appears as a decrease in current personal saving. Positions IIa, IIb, and IIc show the process of adjustment that follows as consumers try to cut their expenditures and increase their

savings. Every cut in expenditures produces a cut in income, so that saving cannot be increased by this means. Position III is the final resting place. At this point disposable income has been reduced until consumers do not wish to save any more than they actually are saving. They therefore will not try to cut their expenditures any further, and disposable income stops falling. Here again, the amount by which income must change before a point of equilibrium is reached depends upon the shape of the consumption function.

The ratio of the total change in the level of disposable income to the original change in investment that set it off is termed the "multiplier."<sup>5</sup> With a stable consumption function and with the simplifying assumptions described above, this ratio can be determined either mathematically or graphically. On Figs. 4 and 5, it is the ratio of the total change in income (III minus I) to the initial change in income resulting from the original change in investment (II minus I). A numerical example can be developed as follows. For simplicity, a consumption function such that individuals will always try to consume 90 per cent of their incomes will be assumed. Suppose that disposable income is at the level of \$100 billion and current investment expenditures are increased by \$5 billion. Under these circumstances and with the simplifying assumptions made above it is possible to determine how far disposable income will rise. Before the increase in current investment expenditures consumers' expenditures were \$90 billion (90 per cent of \$100 billion) and the remaining \$10 billion of disposable income was current personal saving. When current investment expenditures are increased by \$5 billion, the level of disposable income will rise to \$105 billion, and simultaneously current personal saving will increase to \$15 billion. Consumers' expenditures, which are still at \$90 billion, will now be less than consumers want, and they will be increased. Each increase in expenditures will result in an equal increase in disposable income, however, so that current personal saving will remain at \$15 billion. Expenditures and disposable income will continue to rise together until disposable income reaches the level of \$150 billion. At this level of income the amount of saving that according to the consumption function consumers will want to do will be

<sup>5</sup> Throughout this discussion, the multiplier will be examined in connection with disposable income. In the economic literature, the multiplier is sometimes discussed in relation to gross national product.



\$15 billion (10 per cent of disposable income). This is the amount of saving they are actually doing, so that at this point the process of adjustment will cease and disposable income will stop rising. The \$5 billion increase in the level of investment expenditure thus will result in a \$50 billion increase in disposable income, from \$100 billion to \$150 billion. The \$5 billion will, in fact, be multiplied ten times, so that with a consumption function such that consumers wish always to spend 90 per cent of their incomes, the multiplier is always 10. Similarly, if the consumption function were such that people wished to spend 80 per cent of their incomes, the multiplier would be 5; if 99 per cent, the multiplier would be 100. The multiplier effect can be illustrated equally well with reference to a decrease in income. In the example given above suppose that the initial change in investment expenditures had been a decrease of \$5 billion instead of an increase. This would have decreased savings from \$10 billion to \$5 billion and would have decreased disposable income from \$100 billion to \$95 billion. In the attempt to adjust to this situation consumers would cut their expenditures, and with each cut in expenditures their incomes would go down. This process would continue until disposable income reached the level of \$50 billion. At this point individuals would want to save \$5 billion, exactly the amount they would be saving, and the decline in expenditures and in incomes would cease.

One more practical consideration must be brought out in connection with the magnitude of the multiplier. Throughout this analysis, it has been implicitly assumed that the consumption function will not shift. This assumption, of course, is not necessarily warranted. Changes in prices and in the expectations of consumers naturally will accompany changes in disposable income, and these may cause shifts in the consumption function that will alter the multiplier.<sup>6</sup> This situation is shown in Fig. 6.

The shifts downward in the consumption function accompanying

<sup>6</sup> Since a change in the level of disposable income invariably causes a change in relative prices, it is probably impossible for the economy to move along the consumption function. Instead, the consumption function itself will shift continually throughout the process of adjustment. For this reason the observed consumption function shown in Chart 12 actually represents points on different consumption functions, since both movements along the consumption function and shifts of the consumption function itself would have occurred over the years.

falling disposable income have increased the multiplier, since it is now necessary for income to fall by a larger amount before consumers will reach an adjustment with which they are satisfied. The possible repercussions of shifts in the consumption function during cumulative movements will be considered in greater detail in the following chapter.

The multiplier thus essentially reports by what ratio disposable in-

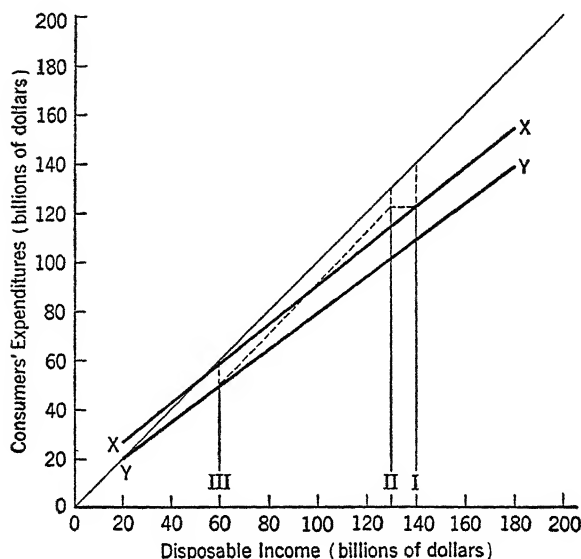


Fig. 6.

come must change in order to produce a change in the desire to save equivalent to the initial change in the level of investment. This change in the desire to save is brought about by individuals themselves, who through their own reactions change the level of their incomes by the necessary amount. The consumption function can be interpreted as an indicator of the amount by which disposable income in the economy must change in order to change the desire to save by a specific amount, and in this sense it determines the extent of the cumulative adjustments that must take place in income in order to bring consumers into adjustment with their incomes and with the desired rate of investment in the economy. For the most part the consumption function and therefore the multiplier should be thought of as part of the theoretical

explanation of the process of change rather than as an empirical description.

### **Gross Current Business Saving and Government Surplus or Deficit**

The simplifying assumptions that were used in explaining the theory of the multiplier were highly unrealistic, and it is now necessary to consider the effect of the introduction of more probable assumptions with respect to, first, gross business saving and the government surplus or deficit and, in the next section, gross current investment. The removal of these two assumptions does not invalidate the mechanism of the multiplier that was developed in the previous sections; rather, it alters the magnitude of the adjustments that will take place in disposable income in the economy. It has been assumed that the level of gross business saving and of the current government surplus or deficit will remain unchanged by any change that takes place in consumers' expenditures. By following through the effects that a change in the level of expenditures may be expected to have upon both of these, their reactions can be integrated into the total process of change.

Gross business saving comprises two elements: undistributed profits of corporations and capital consumption allowances. Undistributed profits are that portion of total corporate profits which are not paid out either in the form of corporate profits taxes or as dividends. A rise or fall in consumers' expenditures will ordinarily lead to a change in total corporate profits in the same direction, so that if undistributed profits were to be unaffected by a rise or fall in consumers' expenditures, the part of profits that is paid out—taxes and dividends—would have to change by exactly the same amount that total profits change. In actual practice, however, corporate profits taxes and dividends paid out do not exhibit any such equal movement with total profits. The national income statistics reveal that when the earnings of corporations increase, the level of undistributed profits increases also. Barring a change in the tax law, the profits tax will move roughly in proportion to total profits, but dividend payments will behave quite differently. In depressions corporations frequently try to keep up the level of their dividend payments even when they are making losses, and in prosperous times all of the rise in profits is seldom passed on to stockholders in the form of increased dividends. When profits fall, therefore, undis-

tributed profits will also fall; and when profits rise, undistributed profits will rise. Capital consumption allowances, the other component of gross business saving, will, of course, be affected to a much smaller degree by changes in the level of consumers' expenditures, but even here some change in the same direction is likely. Instead of remaining constant, therefore, gross business savings as a whole may be expected to increase when the level of consumers' expenditures increases and to decrease when the level of consumers' expenditures decreases.

The current surplus or deficit of the government, similarly, cannot be expected to remain unchanged when consumers' expenditures change. The government surplus or deficit is the difference between government outlays and government receipts from taxes. Government outlays, on the whole, bear no necessary relation to the level of consumers' expenditures,<sup>7</sup> but tax receipts do. When consumers' expenditures increase, incomes must increase in some sector of the economy; and when incomes increase, tax receipts will increase. Assuming that government outlays remain unchanged, therefore, an increase in consumers' expenditures will increase the government surplus (or decrease the deficit), and a decrease in consumers' expenditures will decrease the government surplus (or increase the deficit).

Both gross business saving and the current surplus of the government, therefore, can be expected to react to an increase or decrease in consumers' expenditures by moving in the same direction that consumers' expenditures change. When consumers' expenditures increase, a part of that increase will be siphoned off into gross business saving or government surplus instead of appearing as an increase in disposable income. Disposable income will not rise by the same amount that consumers' expenditures rise, and current personal saving (the difference between disposable income and consumers' expenditures) will actually decrease. The impact of this change in current personal saving can be seen in Fig. 7.

Figure 7 is the same as Fig. 4, except for the recognition of the fact that disposable income will not rise so fast as consumers' expendi-

<sup>7</sup> Certain government outlays, *e.g.*, services to business, may be expected to increase when consumers' expenditures increase and decrease when consumers' expenditures decrease, whereas others—aid to agriculture, etc.—may be expected to behave in reverse manner. But both of these categories are a fairly small proportion of the total.

tures. As in Fig. 4, position I shows the initial equilibrium situation, and position II shows the situation after the initial increase in investment has increased disposable income but before consumers have had a chance to adjust their expenditures to their new level of income. The subsequent positions (IIa, IIb, IIc) showing the adjustments of individuals reflect the fact that consumers' expenditures rise faster

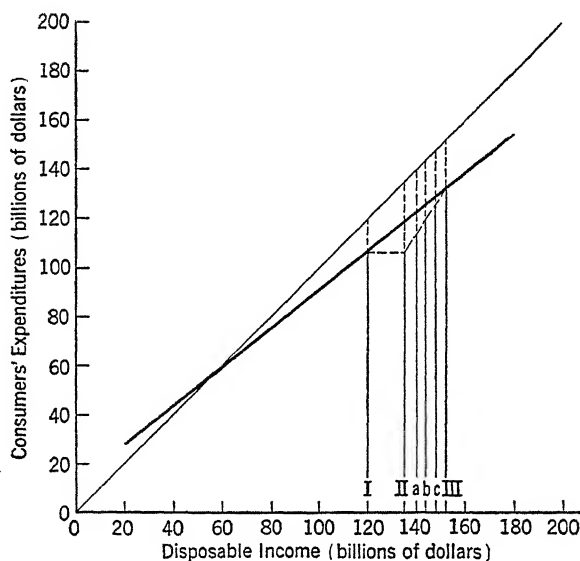


Fig. 7.

than disposable income. The path of adjustment is no longer parallel to the diagonal but instead rises faster. The equilibrium position (position III), where consumers' expenditures once more lie on the consumption function, is reached at a lower level of disposable income, since voluntary savings do not now have to increase to the full extent of the original increase in investment. The difference between the necessary increase in current personal saving and the original increase in investment is, of course, equal to the amount which is siphoned off into gross business saving or government surplus, so that total gross current saving will have increased by the requisite amount. The existence of undistributed profits and of taxes thus will have a limiting effect upon the multiplier, making the increase in disposable income

resulting from an increase in investment expenditures smaller than it otherwise would have been.

The multiplier effect in a period of cumulative downward movement of income will similarly be limited by the existence of undistributed profits and of taxes. A decline in consumers' expenditures will not ordinarily result in a decline in disposable income of an exactly equal amount. When consumers' expenditures fall, undistributed profits will probably also fall: corporate profits taxes will fall roughly in proportion to the fall in total profits, but dividends paid out to stockholders are usually not cut by the full amount of the fall in profits after taxes. Similarly, the government surplus can be expected to decrease (or the deficit increase) if government expenditures are unchanged, since tax receipts will fall. For these reasons disposable income will fall less rapidly than consumers' expenditures, and a position of equilibrium will be regained at a higher level of income than it would have been if gross business saving and the government surplus or deficit remained unchanged.

#### THE DETERMINANTS OF INVESTMENT IN THE ECONOMY

In the discussion of the theory of the multiplier the second simplifying assumption that was made specified that the level of investment expenditures would not react to changes that took place in the economy during the process of adjustment. In this section this unrealistic assumption will be abandoned and the determinants of the level of investment will be explored in order to show the role of investment in the mechanism of adjustment.

##### **The Acceleration Principle**

The relationship between consumers' expenditures and investment expenditures is partially explained by the traditional theory of the acceleration principle. The acceleration principle relates increases in investment expenditures to increases in consumers' expenditures through derived demand. An increase in the rate of output of consumers' goods may make investment expenditures necessary, either to extend the capacity of the expanding consumers' goods industries or to provide additional stocks of goods for the inventories of manufacturers and distributors.

THE NATURE OF DERIVED DEMAND. If every industry in the economy were operating at capacity, and if this capacity were neither increasing nor decreasing, investment expenditures for producers' durable goods would consist solely of the replacements of worn-out machinery that would become necessary each year. Suppose, for example, that the cotton textile industry was using machinery which lasted ten years; under these conditions it would need to buy for replacement each year an amount of textile machinery equal to 10 per cent of the total quantity in use. The producers of textile machinery would be geared to a level of output equal to this replacement rate. Under these circumstances, an increase in expenditures of consumers for cotton textiles might induce textile manufacturers to increase their capacity, and such an extension of capacity would require expenditures for textile machinery in excess of those needed simply for replacement during the year. These increased expenditures for textile machinery are derived from the increased volume of expenditures on cotton textiles and so can be said to be the result of derived demand. On the basis of a given increase in consumers' expenditures textile manufacturers might decide to expand capacity by 10 per cent. The machinery required for the increased capacity would then be exactly equal in amount to that which is currently needed for replacement. The total amount of machinery purchased would be equal to 20 per cent of the machines in use, and the producers would have to double their output to meet both requirements.<sup>8</sup> Textile machinery producers could continue to produce at this double level of output, however, only as long as increasing consumers' expenditures continued to cause the same amount of expansion each year in the cotton textile industry. For instance, textile manufacturers, after they had expanded their capacity by 10 per cent the first year, might find in the second year that consumers' expenditures on textiles were still increasing, but only fast enough to warrant an increase in their capacity of an additional 5 per cent instead of 10 per cent as in the first year. Their purchases of textile machinery would then amount to the 10 per cent required for replacement plus 5 per cent for expansion, or a total of 15 per cent—less than in the previous year. The output of textile machinery

<sup>8</sup> A relatively small change in consumers' expenditures may thus cause a relatively large change, in percentage terms, in investment expenditures. This is the source of the name "acceleration principle."

producers would actually drop below the level of the previous year, even though consumers' expenditures on cotton textiles were still increasing. Investment expenditures will thus decline in spite of increases in consumers' expenditures if the *rate of expansion* slows up. This phenomenon was well illustrated by the wartime experience of the United States economy. In Chap. 8 it was pointed out that machine-tool producers and the construction industry were called upon to build war capacity at a very early stage of the war effort but that once such capacity was created, the major task of these sectors of the economy was accomplished and their output declined, while the rest of the economy went on to greater heights of production.

The principle of derived demand applies to inventory accumulation, as well as to producers' durable goods. Inventories are a necessary part of the economic process. When the volume of production grows, producers will need additional stocks of raw materials to be able to produce this larger volume. More goods will be in the pipe line of the manufacturing processes, so that a part of current production of the economy must be set aside to fill this need. Finally, goods in the hands of wholesalers and retailers will increase with the increased volume of production, and this accumulation will absorb goods out of the stream of current production. As was true for producers' durable goods, the amount of additional inventories that are accumulated is dependent upon the continued increase in the volume of consumers' expenditures. A slowing down of the expansion process means that a smaller quantity of goods will have to be dedicated to this use; when a level rate of output is reached, no further investment at all in inventories will be necessary. Investment expenditures for inventory accumulation will increase as the rate of expansion of production increases; but when the expansion slows down, such investment expenditures will actually decline.

**THE RATE OF ACCELERATION.** The amount of derived expenditures for investment goods that will result from a given change in the volume of consumers' expenditures will differ considerably, not only among different industries, but also in the same industries with differing attendant circumstances. The derived demand resulting from an increase in consumers' expenditures for the products of some industries might be negligible; this would be especially true in those industries which react to an increase in expenditures by allowing price to rise



rather than by increasing output. Even in industries that do expand output, however, there are a number of factors that may serve to keep the expansion of investment expenditures relatively small. (1) The industry may be operating at less than capacity, and a considerable increase in output may occur before an increase in capacity would be required. An increase in consumers' expenditures in such an industry might have no effect on investment expenditures. (2) The industry might be one that uses very little capital equipment, so that an increase in output could be achieved by hiring more labor and buying more materials. This would be especially true of industries in which a major part of the work is assembly. (3) The needed expansion in capacity might be obtained through the installation of machinery that increases productivity, so that the amount of investment expenditures normally required for replacement alone might be sufficient in some periods to provide for an actual expansion of the industry.

Even within the same industry the willingness of producers to expand under the impact of increasing consumers' expenditures will vary considerably at different levels of economic activity. Forces that at one level of activity would induce producers to make a given volume of investment expenditures might at another level call forth either a smaller or a larger volume. A businessman invests in increased capacity with an eye to the future. During the early stages of an upward movement he may be very sensitive to increases in expenditures on his product and try to expand so that he can capture a larger share of the increasing market. On the other hand, when the level of activity has been rising for some time, he may be reluctant to expand further in spite of increased expenditures on his product, feeling that this additional capacity would go unutilized in the future and so would not pay for itself. The investment expenditures that are derived from increases in consumers' expenditures are thus conditioned by a large number of other factors, but their reactions must be taken into account in analyzing the process of income change.

It is similarly difficult to predict the derived effect upon investment expenditures of a decrease in consumers' expenditures. A decline in output may to some extent permit an industry to consume its capital, instead of maintaining it completely. But this process cannot continue indefinitely, with further decreases in consumers' expenditures on the product of the industry continually causing greater reductions in the

amount of replacement expenditures that are being made. Machinery will eventually become obsolete, so that producers are forced to purchase new equipment in order to meet competition. Outlays on producers' durable goods in 1932 were 25 per cent of the total amount needed for replacement, even though excess capacity existed in almost all industries. On the other hand, expenditures for inventory accumulation may actually become negative, *i.e.*, producers and distributors may sell goods out of stock without replacing them. Thus, with a contraction in consumers' expenditures, the derived effect on investment expenditures will not necessarily be exactly the opposite of that which results when consumers' expenditures expand.

### The Marginal Efficiency of Capital

Before attempting to integrate the acceleration principle into the theory of the multiplier, it will be helpful to consider the other elements influencing the level of investment in the economy. When this has been done, it will be possible to see how changes in the level of investment—whatever their cause—fit into the process of income change.

The factors that influence the level of investment expenditures can conveniently be grouped under the heading of the marginal efficiency of capital. The marginal efficiency of capital may be defined as the expected rate of return<sup>9</sup> that an additional investment expenditure would yield over and above its costs, aside from the cost of interest. The marginal efficiency of capital minus the interest rate that a producer must pay for the use of this capital is the expected profit rate on the investment expenditure. For instance, a marginal efficiency of capital rate of 6 per cent combined with an interest rate of 4 per cent would leave 2 per cent as the expected net profit rate. Not all investment expenditures in the economy will yield the same rate of return, of course; and, if risk is taken into account as a part of cost, businessmen will naturally prefer to make those investment expenditures which have the highest expected rate of return, since they will yield the highest net profit. But as long as the expected rate of return on a given project is higher than the interest rate, the producer can always make a profit by undertaking that investment expenditure. For this reason,

<sup>9</sup> The marginal efficiency of capital thus is the rate of discount that would make the *present* value of the expected net returns from the investment equal to its cost.

after the most desirable investment opportunities have been used up, producers will continue to make further expenditures in less profitable areas until finally they have left only those investment outlets which will not yield them sufficient return to cover the interest rate. At this juncture producers will not make any more investment expenditures.

**THE MARGINAL EFFICIENCY OF CAPITAL SCHEDULE.** This relationship between the expected profitability of investment expenditures and the

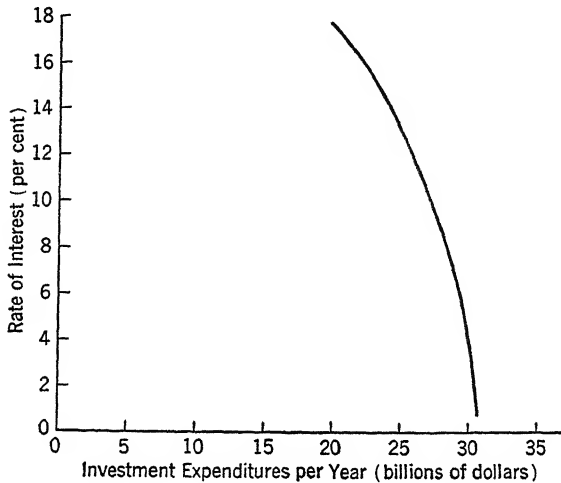


Fig. 8.

interest rate can be put into the form of a schedule showing the annual rate of investment expenditures that would take place with given interest rates. This has been done in Fig. 8.

On the vertical axis of Fig. 8 are interest rates, and on the horizontal axis are rates of investment expenditures per year. The schedule relating the rate of investment expenditure that business would be willing to make to the rate of interest is the marginal efficiency of capital schedule, since it shows the marginal rate of return that would accompany various rates of investment expenditure. With this schedule, for instance, businessmen would be willing to make investment expenditures at the rate of about \$28 billion a year when the interest rate is 8 per cent. It follows from this that the marginal rate of return on the least profitable investment, *i.e.*, the marginal efficiency of capital, at a level of investment expenditure of \$28 billion per year must be

8 per cent. Were all investment expenditures yielding higher returns than 8 per cent, businessmen would be willing to make additional investment expenditures above the \$28 billion level. On the other hand, all the investment expenditures that businessmen are willing to make at this point must be expected to yield at least 8 per cent, since this return is required to cover the existing interest rate.

In a modern economy a change in the interest rate from 4 to 6 per cent would be considered a large change, yet on a marginal efficiency of capital schedule such as the one shown in Fig. 8 this increase in the price of capital would only decrease the rate of investment expenditures from a level of \$30 billion to a level of \$29 billion. In other words a large increase in the interest rate (50 per cent) might decrease capital expenditures by a relatively small amount (less than 5 per cent). A marginal efficiency of capital schedule of this shape does not seem unreasonable when it is recalled that the interest rate is only a minor part of the costs of most producers, so that even a large change in it would not affect total costs very significantly. There is, however, one major exception to this generalization. Certain capital goods such as factory buildings and housing last a great many years, so that their decline in value each year is small relative to their total original cost. For these assets interest charges are relatively more important and often constitute a major portion of the total costs of the investment. A change in the interest rate may therefore cause a significant change in the cost of building and housing services, and this, in turn, will change the profitability of the construction industry.

Although changes in the interest rate thus do not in general greatly affect the rate of investment expenditures, these expenditures are highly sensitive to other influences, changes in which will shift the position of the entire marginal efficiency of capital schedule. The national income statistics reveal that the rate of investment expenditures varies widely from period to period. In 1929 the volume of investment expenditures amounted to about \$15 billion, whereas in the depression of 1932 it was less than \$1 billion. In the period after World War II it rose as high as \$32 billion per year. These violent fluctuations are attributable to shifts in the entire marginal efficiency of capital schedule in one direction or the other rather than to movements along the schedule in response to changes in the interest rate. Such a situation is illustrated in Fig. 9.

This chart shows a number of different possible positions of the marginal efficiency of capital schedule. Those at the extreme left would apply to periods when producers did not expect very much investment expenditure to be profitable, irrespective of what the interest rate might be. The schedules at the right of the diagram, on the other hand, apply to periods when producers' hopes of profit are high enough to cover even a high rate of interest. Producers' expectations

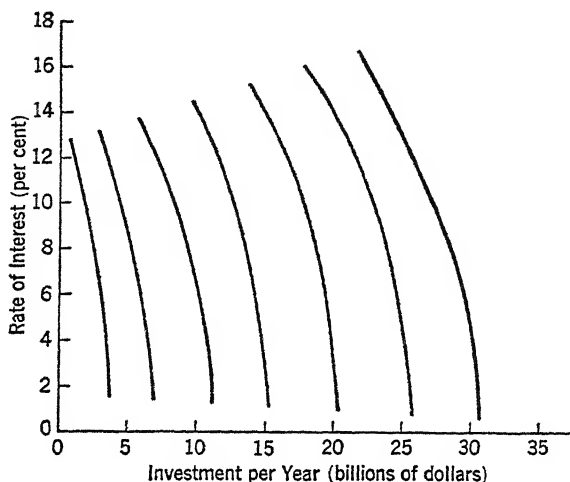


Fig. 9.

of profits from identical investments differ violently from period to period, and these changes, in turn, change the rate of investment expenditures that producers are willing to undertake.

**FACTORS AFFECTING EXPECTATIONS OF PRODUCERS.** Producers' expectations of profits are highly related to the past and current conditions in the economy. In a period when consumers' expenditures are increasing and producers find the sales of their products rising, expectations will tend to be high; on the other hand, when consumers' expenditures are falling and causing cutbacks in prices and output, producers will be extremely skeptical about the profitability of any investment expenditures or any attempts to expand. The actual level at which the economy is operating as well as the rate and direction of change in gross national product will also be taken into account. An increase in consumers' expenditures at a level of income such that

the economy evidently is on the road to recovery will be interpreted very differently from an equivalent increase in consumers' expenditures when producers are wondering whether a depression is about to follow an inflationary boom. A slight decrease in consumers' expenditures at the top of a boom might cause producers to start a policy of retrenchment and make them hesitate about any but very necessary investment expenditures. This large element of instability is all the more important, since a decrease in the rate of investment itself may be instrumental in lowering personal income and so causing a contraction in consumers' expenditures. A slight decline in the level of investment expenditures could easily generate a situation in which the expectations of producers would quickly be reversed and a sharp cumulative decline would be set into motion.

Besides the level of economic activity and its rate and direction of change, other factors may have a strong influence on expectations. Inventions and changes in technology can either encourage or discourage investment expenditures. An invention may be of such a nature that it makes previous stocks of capital obsolete, so that a great deal of new investment is necessary, or it may develop processes that use more capital equipment than did the processes previously in use. But inventions and changes in technology may also be of a type that increases productivity in such a way that fewer capital goods will be needed for replacement and plant expansion; these changes are capital saving and require smaller investment expenditures. Finally, the rate of technological change at times may be so rapid that producers are reluctant to make investment expenditures for fear that further technological developments will make their equipment obsolete before they have a chance to use it. This factor was undoubtedly important during the early stages of the growth of the television industry; radio manufacturers hesitated to start production of television receivers because it was obvious that new developments would occur before their models could be put on the market, and they would run the risk of having some other producer come out with a vastly superior model.

The labor situation in the economy may have a very strong influence on the investment expenditures of producers. If it is evident that, by the time additional capacity is built, there will be a labor shortage

with high wage costs, producers will probably not feel that the time is a good one for expansion. On the other hand, rising labor costs may induce producers to install laborsaving devices to cut their costs. These considerations will have opposite effects upon investment expenditures, so that although it is clear that the labor situation will influence investment expenditures, it is impossible to predict exactly what effect a given change will have.

The political climate also has an important bearing upon producers' expectations and the rate of investment expenditures. Changes in tax rates or in the regulations regarding industry will have a bearing on producers' actions in building for future capacity. High taxes will deter some producers, who may feel that the profit which they expect to make after the payment of taxes is not large enough to compensate them for the risk and responsibility involved. Other producers may react to high taxes by maintaining their plants in excellent condition and spending money on advertising, research, and other such costs, which are considered nontaxable current expenditures in the tax law but which from the point of view of the producer are investment expenditures. Here again it is difficult to analyze the effect of any specific political action, but it can almost certainly be said that an unsettled political situation will be a positive deterrent to investment expenditures. Producers have a tendency to wait and see what will happen in an unsettled period; and if the unsettled state continues for any length of time, it will probably result in a very low level of investment expenditure.

Finally, there are many influences exogenous to the economy that can have a very great effect upon investment expenditures. Conditions in foreign countries that lead foreign purchasers to make heavy expenditures may create a net export balance for the country from which the goods and services are bought. A change in weather conditions that alters the size of crops will have repercussions on both national and international conditions, and these, in turn, may influence the level of investment expenditures. Investment expenditures are always made in the light of existing or expected future conditions; and as these conditions change owing to external forces, the level of investment expenditures itself will change.

### **Investment Expenditures and the Multiplier**

It is now possible to consider how the multiplier will be affected by removing the second of the two simplifying assumptions that were adopted above. These two assumptions, it will be recalled, were (1) that gross current business saving and the current government surplus or deficit would not react to any change in consumers' expenditures and (2) that gross investment expenditures similarly would not be affected by any change in consumers' expenditures. It has already been shown that changes in gross current business saving and the government surplus or deficit may be expected to limit the action of the multiplier; in a period of increasing income they will cut down the amount of the increase in consumers' expenditures that will return to individuals as disposable income, and in a period of falling income they will prevent disposable income from falling as much as consumers' expenditures. With respect to the second assumption, the effects of changes in investment expenditures in bringing about cumulative changes in disposable income have already been traced, but the final step—the analysis of the manner in which investment expenditures themselves will react to the process of cumulative change and, in turn, again alter disposable income—has not yet been taken. This step is necessary if the relation of investment expenditures to the multiplier is to be explained.

**THE ACCELERATION PRINCIPLE AND THE MULTIPLIER.** The influence of derived demand upon the multiplier will be different at different points in the process of adjustment. The acceleration principle becomes a significant factor influencing investment expenditures during the upswing only when an expansion of capacity results from an increase in consumers' expenditures. As has been pointed out above, an increase in consumers' expenditures may result only in a price rise or in an increase in the utilization of already existing capacity; and furthermore, when considerable capacity has already been added to the economy, producers may not even respond to an increase in consumers' expenditures by maintaining the previous rate of their investment expenditures. For these reasons the acceleration principle may be inoperative or unimportant in many periods of increasing consumers' expenditures and obviously will then have no appreciable effect upon the multiplier. However, when a rise in the level of consumers' ex-



penditures does result in an increase in capacity, the acceleration principle will reinforce the cumulative change in disposable income and so will increase the multiplier effect. In the later stages of adjustment when income is increasing more and more slowly, derived demand will fall off and a decline in the level of investment expenditures will result; in these latter stages, therefore, the acceleration principle will tend to limit the cumulative upward movement of disposable income. In other words the spurt of creating additional capacity in the economy will at one point in the adjustment process tend to increase the multiplier, but the falling off of investment expenditures thereafter will tend to restrict it and to reduce the rate at which personal income is increasing.

The acceleration principle may take hold with a decrease in consumers' expenditures much more quickly than it will in response to an increase, since many industries are so organized that marginal plants can be shut down immediately and their capacity not be maintained. This decrease in investment expenditures will reinforce the multiplier downward by causing a further fall in disposable income. After a prolonged period of falling consumers' expenditures, however, the effect of the acceleration principle may again be reversed; industries that have postponed their maintenance may be forced to increase their level of investment expenditures even to continue to operate at a low level. When this happens, the multiplier downward will be lessened and the cumulative decline of disposable income will be slowed.

The interaction between the acceleration principle and the multiplier will thus be very different at different phases of the cumulative movements of disposable income. In certain periods derived demand for investment goods will reinforce the multiplier, but in other periods it may do just the reverse. Only careful examination of each situation can indicate clearly the connection between the acceleration principle and the multiplier.

**EXPECTATIONS AND THE MULTIPLIER.** Investment expenditures will react to changes in consumers' expenditures and so affect the multiplier not only because of the acceleration principle, but also because of repercussions on the expectations of producers. Changes in the expectations of producers at some points in an upswing or downswing will have a reinforcing effect upon the multiplier, heightening the

cumulative change in either direction. A rise in consumers' expenditures may lead producers to expect better business conditions so that they will increase their investment expenditures, and similarly a fall in consumers' expenditures may make them feel that they should contract their expenditures. But expectations ordinarily will not continue to react this way when consumers' expenditures have increased or decreased over a prolonged period. In a period of upswing producers may become cautious and even expect a depression in spite of continued increases in consumers' expenditures; past increases in income may have created an inflation that producers do not think can continue, so that they may even decrease their investment expenditures. The opposite situation may develop in a depression. Producers who are still feeling the effects of contraction in consumers' expenditures may decide that the bottom of the depression is near and increase their investment expenditures either because the cost of capital equipment is low or because they hope to get ahead of their competitors in the coming upswing by being ready to expand output. Thus again, expectations will increase the multiplier in some periods and decrease it in others. The exact relation for any particular phase of the upswing or downswing is difficult to predict because of the numerous factors that condition and shape these expectations.

In any practical sense the effects of expectations upon the level of investment expenditures cannot be separated from the effects of the acceleration principle. The acceleration principle is based upon producers' expectations of the level of future expenditures, and at the same time the influence of expectations of the level of investment depends on the extent of the derived demand that a desired expansion in output will call forth. Thus viewed, investment expenditures are a combined result of the operations of the acceleration principle and of expectations; at times the reaction of investment to changes in consumers' expenditures will serve to reinforce the multiplier so that the cumulative change in disposable income is greatly heightened, but in other periods gradual or sudden changes in investment expenditures will limit or even reverse the cumulative movement of disposable income. Unlike gross current business saving and the government surplus or deficit, the induced changes in investment will not always affect the multiplier in the same direction. Figure 10 shows how the reactions

of investment expenditures to increases in consumers' expenditures might influence the pattern of cumulative adjustment.

In phase 1, the cumulative movement upward has started, but the acceleration principle and expectations are not yet having any effect. In phase 2, the action of the acceleration principle and of producers' expectations serves to reinforce the multiplier, so that disposable in-

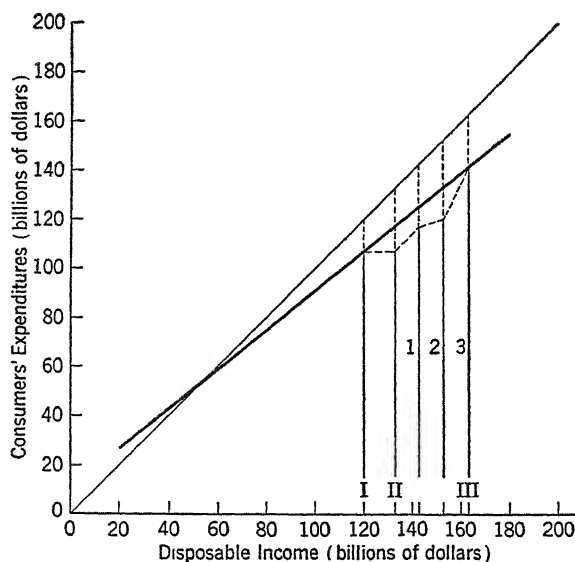


Fig. 10.

come rises faster than consumers' expenditures. Finally, in phase 3, investment expenditures are acting as limiting factors. With changes in the influence of the acceleration principle and expectations, consumers' expenditures now rise faster than income until the consumption function is regained.

## SUMMARY

### The Consumption Function

The propensity to consume schedule for an individual records the amount which that individual would spend for consumption at different levels of income. From such a schedule, obviously, it is also possible to find out how much an individual would save at any given

level of income. For most individuals it is probably true that the higher the income the greater the amount of saving the individual will wish to do. Spending habits of individuals may change for many reasons; some of these changes are brought about by such psychological factors as changes in tastes, but many of them are due to changes in the situation confronting the individual. When prices rise or fall, individuals may decide to change the amounts they spend. Similarly, such things as the accumulation of savings over a period of time, changes in the general standard of living in the economy, changes in provisions for social security, and shifts in expectations about future economic and political conditions all may lead to shifts in the propensity to consume schedules of individuals.

The consumption function for the economy as a whole is the schedule showing the total amounts of consumers' expenditures that would be made at various levels of disposable income. The consumption function depends not only upon the propensity to consume schedules of all of the individuals in the economy but also upon the way in which the total amount of disposable income is distributed among these individuals. If neither of these factors changes, the consumption function will show exactly what the level of consumers' expenditures will be at any given level of disposable income, but any shift either in the propensities of individuals to consume or in the distribution of income will lead to a corresponding shift in the consumption function itself. There is some evidence that in periods which are generally considered "normal" the consumption function is relatively stable and does not shift without apparent reason.

### **The Theory of the Multiplier**

Any change in the level of disposable income in the economy will set into motion a process of adjustment of consumers' expenditures to this change. When the level of disposable income is lowered, individuals must readjust their budgets to their lowered incomes, and they therefore will contract their expenditures on consumption goods. When individuals receive more income, correspondingly, they will want to spend a part of the increase and will raise their expenditures. These changes in consumers' expenditures resulting from a change in the level of disposable income will, in turn, have repercussions upon the level of disposable income itself. When one individual reduces his

purchases of goods, some other individual's income, which had been derived from the sale of these goods, is immediately cut down. When spending is increased, more money is immediately received as income by those individuals who sell the goods upon which the increased expenditures are made. These sellers of goods whose incomes have been changed will then, in turn, adjust their expenditures, and a cumulative process of adjustment will be set into motion. An initial change in the level of individuals' disposable income thus through the process of cumulative adjustment will finally cause a very much greater change in the level of such income in the economy.

The mechanism and limits of the process of adjustment can best be understood if two basic assumptions are made. Although both of these assumptions are unreal and must later be removed, they will serve to show how the cumulative process of change is related to the consumption function for the economy. (1) It will be assumed that a change in consumers' expenditures will not have repercussions upon either the gross current saving of business or the current surplus or deficit of the government. (2) It will be assumed that the level of investment expenditures will not react to changes in consumers' expenditures. With these assumptions, it necessarily follows that any change in expenditures for goods and services will involve a simultaneous and equal change in disposable income. An increase in the level of investment expenditures, therefore, will increase disposable income by an equal amount. Until individuals have time to adjust their expenditures to their new level of income, current personal saving will also increase by the amount of the investment. As individuals attempt to adjust to the new situation by increasing their expenditures, their incomes (as a group) will again rise by the amount of the increase in consumers' expenditures. Personal current saving in the economy therefore will remain unchanged, no matter how much consumers' expenditures are increased. The more individuals as a group spend the greater by the same amount their total disposable income will be; the difference between disposable income and consumers' expenditures will remain unchanged. As the level of disposable income increases, however, individuals will *want* to save a larger and larger amount, and finally the process of adjustment will bring disposable income and consumers' expenditures to the point where they again lie on the consumption function. At this point the cumulative reaction will stop,

because consumers will be spending and saving the proportions of their incomes that they want to and they have no reason to increase their consumers' expenditures further.

The amount by which an initial increase in expenditures will be multiplied in its effect by the cumulative process of adjustment is of great importance. The ratio of this initial increase to the total increase in disposable income that it brings forth is called the multiplier. For example, if an increase in investment expenditures of \$1 billion finally resulted in an increase in disposable income of \$8 billion, the multiplier would be 8. The multiplier is, obviously, determined by the shape and position of the consumption function. If in the process of adjustment disposable income and consumers' expenditures reach a level that lies on the consumption function after only a slight increase, the multiplier will be very low; but if a large increase in disposable income is required before the consumption function is reached, the multiplier will be large.

A decrease in the level of investment expenditures, similarly, will start a cumulative movement downward. Individuals with lowered disposable incomes will decrease their expenditures, and a cumulative decrease in income and expenditures will follow. This progressive movement downward will eventually reach the consumption function again, at the point where individuals are spending and saving the amounts they wish with the level of disposable income that they have, and the cumulative decline will cease. The multiplier downward need not be of the same magnitude as the multiplier upward, since, of course, the consumption function need not be a straight line for all levels of disposable income.

### **The Multiplier in Practice**

The theory of the multiplier is not invalidated by the removal of the two assumptions that were made above. The process of adjustment that takes place and the magnitude of the multiplier that results will be somewhat altered, but the principle remains the same. Relaxation of the first assumption means that a part of any increase in expenditures may be siphoned off either by undistributed profits or by taxes, so that not all the increased expenditures will result in an increase in disposable income. During the upward cumulative process consumers' expenditures will rise faster than income, therefore, and the consump-

tion function will be regained with a smaller increase in disposable income than would otherwise have been the case. In a downward cumulative adjustment a decline in consumers' expenditures will similarly bring about a smaller decline in disposable income; both undistributed profits and taxes will shrink, so that disposable income will not decrease as much as consumers' expenditures. In other words the existence of undistributed profits and of taxes in the economy decreases the multiplier effect and acts to limit the extent of the cumulative movements.

The second assumption involves the reaction of investment expenditures to changes in consumers' expenditures. There are two ways in which investment expenditures may be altered by changes in consumers' expenditures: through the operation of the acceleration principle and through repercussions upon the expectations of producers. The acceleration principle is based upon the fact that an increase in consumers' expenditures may induce an expansion of productive capacity, and a decrease in such expenditures may permit a lapse in the maintenance of capacity. The acceleration effect is not always operative with a change in consumers' expenditures; and when it is operative, it may lead to very different results at different stages in the upswing or downswing; a strong acceleration of derived demand during one part of a cumulative movement may lead to exactly the opposite reaction upon investment in the immediately following stage. Thus the acceleration principle may at one point in the cumulative movement have no effect upon the multiplier at all; at another point it may increase the multiplier by adding additional investment expenditures; and finally, at still another point it may decrease the multiplier through the cessation of these additional investment expenditures. All these effects must be considered in the analysis of any particular situation.

The expectations of producers similarly will react quite differently to changes in consumers' expenditures at different points in a cumulative movement. The net result of changes in producers' expectations may be either reinforcement or limitation of the multiplier. Expectations obviously are a factor that must be taken into account in explaining the process of adjustment, even though in any particular circumstance it may be impossible to predict exactly what their influence will be.

Figure 11 shows a pattern of adjustment that might take place with both of the original assumptions dropped.

In phase 1 undistributed profits and taxes cause consumers' expenditures to rise faster than disposable income. In phase 2 investment expenditures are reinforcing the multiplier to a greater extent than the gross savings items are limiting it, so that income rises faster than

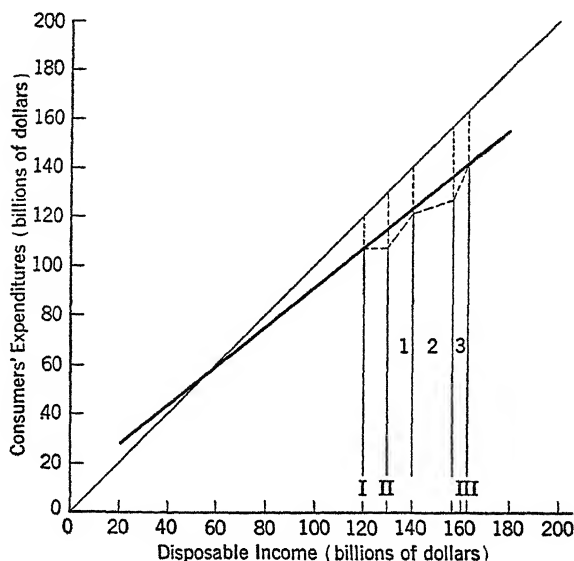


Fig. 11.

consumers' expenditures. Finally, in phase 3 both investment expenditures and gross business savings and taxes act in such a way as to limit the multiplier, and consumers' expenditures rise faster than income until the consumption function is again regained.

Income analysis is thus an explanation of the process of cumulative adjustment in the economy. Knowledge of income analysis does not ensure an ability to forecast the future; empirically, few facts are known about the specific reactions of producers and consumers, and accurate prediction would involve a vast knowledge of economic facts and the psychology of human behavior. For any given set of economic facts and reactions of individuals it would be possible to explain the pattern of subsequent events, but the main value of income analysis does not lie in its attempt to explain the future. Rather, its value lies



in its usefulness as an analytical tool. From the mass of changing events in the economy it can abstract particular forces and explain the way in which these forces will influence the level of economic activity. Perhaps its greatest usefulness is in the field of economic policy, for it leads to an understanding of the economic processes involved and delineates the various different ways that a given policy can affect the economy.

## 11. The Nature of Equilibrium and Full Employment

In the theory of income analysis the term "equilibrium" connotes the fact that no cumulative process of adjustment is occurring in any sector of the economy; it does not necessarily imply that full employment exists in the economy. In equilibrium individuals have no incentive to change the level of their consumption expenditures or business to change the level of its investment expenditures. Individuals are saving what they want to out of their current incomes, and investment expenditures of producers are at the level they want. Since actual current saving and actual current investment expenditures in the economy are always equal, equilibrium will exist when the economy voluntarily wishes to save and to invest the amounts that it actually is saving and investing, and there is no attempt on the part of either individuals or producers to change the level of their expenditures. Disequilibrium exists when either individuals or producers are dissatisfied with the level of their expenditures and are attempting to adjust them to a new level. Such adjustment will bring into play a cumulative series of reactions that will alter the level of gross national product unless by chance the various adjustments should exactly offset each other. The previous chapter discussed the mechanism of income analysis in terms of the process of cumulative adjustment that would be set into motion by an arbitrary change in the level of investment. There are, of course, other forces besides autonomous changes in investment that can produce disequilibrium and so start the process of adjustment. The discussion in this chapter will consider (1) some of the possible causes of disequilibrium and (2) the nature of equilibrium and its relation to employment.

## CAUSES OF DISEQUILIBRIUM IN THE ECONOMY

Equilibrium, defined as the absence of a cumulative movement in the economy in either direction, may never actually exist. The impact of changing conditions may continually force new adjustments in such a way that none of the cumulative reactions ever has a chance to reach its end before it is superseded by a new series of reactions. Nevertheless, in order to understand the process of change it is useful to isolate some of the specific forces to which a particular adjustment may be the response. A complete catalogue of all the different factors that could set off such a cumulative reaction would be endless; it would include all those elements which are a part of the evolutionary development of the economy as well as those producing more short-run changes in the level of economic activity.<sup>1</sup> The following treatment will cover only a very small number of such factors. Its purpose is only to demonstrate that the causes of disequilibrium can arise in any sector of the economy—or, for that matter, in changes in the relations among sectors. The cumulative or indirect effects of changes in the level of disposable income have been discussed in the previous chapters; in this section only the initial change that produces the disequilibrium will be discussed.

**Changes in the Level of Investment Expenditures and of Gross Current Business Saving**

In the discussion of the mechanism of income analysis it was assumed that the process of cumulative adjustment in the economy was set into motion by an arbitrary change in the level of investment expenditures. The possibility of such a change in investment expenditures actually occurring is very great.

The level of investment may change whenever anything alters the expectations of producers. The influences bearing upon the expectations of producers were discussed in the last chapter. A change in technology, by leading to the substitution of new equipment for that which becomes obsolete, may increase the level of investment. But technological change can also lead to decreases in investment: some

<sup>1</sup> For examples of such factors that have actually been important in the history of the United States economy, see Chaps. 7 and 8.

types of inventions and changes in processes enable producers to maintain the same level of output with the use of a smaller amount of machinery, so that the replacement needs of the industry become less, or technological change may occur so rapidly that it acts as a deterrent to investment. Aside from the impact of technological changes, producers' expectations may shift for a large variety of reasons. They are conditioned by the past experience of the economy, the political situation, international affairs, labor conditions, and many other less outstanding but nonetheless important factors. Any of these factors may produce a change in the desire of producers to invest that will throw the economy into disequilibrium and require an adjustment to a new level of gross national product.

Changes in the level of investment that will lead to disequilibrium may also occur without any change in the desire of producers to invest. After the lapse of a certain period of time investment expenditures that are made during a period of expansion will mature and either through increased efficiency or through the expansion of capacity will yield a larger volume of production. It is quite possible that the increased flood of goods resulting from the maturing of past investments will not all be purchased by consumers at the current market prices. Through the normal process of growth in the economy, therefore, a situation may arise in which producers will find themselves involuntarily acquiring inventories that they do not want. Their reaction to this situation will have the same effect as a spontaneous reduction in investment. The process of adjustment will necessitate a fall in prices, contraction of output, or a combination of these two. In either case disposable income may fall, and a cumulative movement downward may be started.

Finally, the producing sector of the economy may bring about disequilibrium by a change in the level of the gross saving which it wishes to do. A change in gross current business saving, other things being equal, will result in an immediate and equal change in disposable income and so lead to cumulative adjustment. When gross current business saving decreases, producers are retaining less of the gross national product and paying more of it out as income to individuals. When such saving increases, producers are retaining more and paying out less. Spontaneous changes in business decisions to save, however, are probably much less important as factors leading to disequilibrium than are

changes in investment expenditures; gross current business saving does change, of course, but its changes are usually the result of a cumulative movement upward or downward rather than the initiating factors in such movements. Changes in investment expenditures, on the other hand, not only will result from cumulative movements but also are frequently one of the basic causes of these movements.

### Changes in the Consumption Function

Disequilibrium can also result from a change in the consumption function. The consumption function is often considered to be relatively stable, but it has shifted significantly during periods of great change. The shifts in the consumption function that took place during World

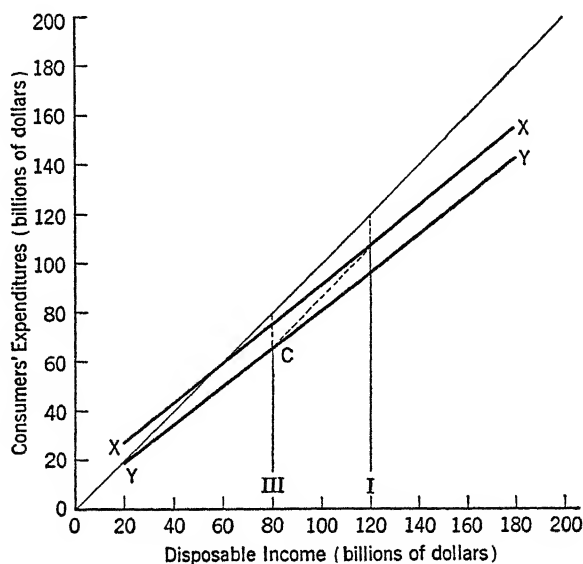


Fig. 12.

War II and immediately thereafter have already been discussed. It is natural that rapid and extensive change in income, prices, output, and employment should change the consumption habits of people to some extent, but it is also true that a change in consumption habits may be the cause of disequilibrium in the economy. The effect of such a shift in the consumption function is shown in Fig. 12.

An attempt by individuals to save more out of their current dis-

posable incomes, if there is no offsetting change in the level of investment expenditures, gross current business saving, or government taxes and expenditures, will set up a cumulative movement downward. The change in individuals' desire to save has shifted the consumption function from  $XX$  to  $YY$ . In order to reach equilibrium under this new condition individuals will have to contract their expenditures, and this will set up a cumulative downward adjustment. In actual practice this process of adjustment would undoubtedly lead to changes in the other elements of gross saving or in investment expenditures, so that the equilibrium position would not necessarily be at point  $C$  on Fig. 12. If investment expenditures were discouraged by the contraction in consumers' expenditures, the level of 'disposable income might fall considerably below point  $C$ .

The consumption function can shift as a result of a change in the distribution of income as well as changes in individuals' propensities to consume. If income were transferred from those who save little or nothing, *i.e.*, the lower income groups, to those who save a considerable portion of their income (the upper income groups), saving for the economy as a whole would presumably increase. Similarly, a change in the distribution of income in the opposite direction would probably tend to decrease saving. It is perhaps possible, however, that a more equal distribution of income would increase saving, since some individuals might then not feel the need to make expenditures simply to maintain their status in the economy. In any case a significant change in the distribution of income would in most circumstances alter the division between current personal saving and consumers' expenditures in the economy and so lead to disequilibrium.

### **Changes in Taxes and Government Outlays**

In most modern economic systems the government plays a very important role in the economy. By taxation it diverts funds from the income stream, and through its expenditures it becomes a purchaser of goods and services. It also may give money to individuals and producers in the form of transfer or subsidy payments and interest on the government debt. When the receipts of the government are larger than its outlays, it will have a current surplus; when receipts are smaller, there is a current deficit. A change in taxes or other receipts will affect the size of the current surplus or deficit if there is no change

in the current outlays of the government, and similarly a change in outlays will directly affect current surplus or deficit if there is no change in receipts. It is, of course, possible for both receipts and outlays to change by the same amount, so that the current surplus or deficit is left unchanged. The following treatment will analyze changes in the government budget in terms of (1) changes in taxes alone, (2) changes in outlays alone, and (3) changes in both taxes and outlays.

Different taxes may have entirely different repercussions, so that a consideration of the effect of a change in the amount of taxation must ultimately be cast in terms of increases or decreases in specific taxes. Taxes that yield the same amount of revenue may have very different effects upon different parts of the economy, and for many purposes the amount collected may be a very poor indication of the importance or burden of the tax. The most extreme examples of this type of disparity are found, perhaps, in the field of prohibitive taxation. Taxes on narcotics, for instance, are levied so as to prevent the purchase of narcotics except at fantastically high prices. The tax, of course, brings in practically no revenue, but it has managed to accomplish the virtual exclusion of a product from the market. In less extreme cases a higher tax rate might reduce purchases sufficiently so that it would bring in less revenue than would a lower rate, so that again, the burden of the tax would not be proportional to its revenue. Ordinarily, however, moderate increases in tax rates will bring in larger revenues.

**PERSONAL INCOME TAXES.** A change in personal income tax revenues may alter both the level and the distribution of disposable income in the economy. If an increase in personal tax revenue were brought about mainly by increases in the amounts collected from people with higher incomes, disposable income would be reduced, but at the same time the consumption function might be shifted upward, since the relative distribution of income would be made more equal. This situation is shown in Fig. 13.

The level of disposable income representing the initial situation after such a progressive tax increase is shown by position II. Disposable income at this point is lower by the amount of the tax increase, *i.e.*, the distance from I to II. The change in the distribution of disposable income has shifted the consumption function upward, but the actual amount of expenditures that individuals will wish to make with the new level of disposable income will probably still be lower than that

which prevailed before the tax increase. No individual has had an increase in disposable income, and some have had decreases, so there is no reason to believe that anyone's consumption expenditures would increase. For this reason even a progressive tax increase would set into motion a cumulative adjustment downward in the economy. If the tax increase were to fall mainly on the lower income groups instead of

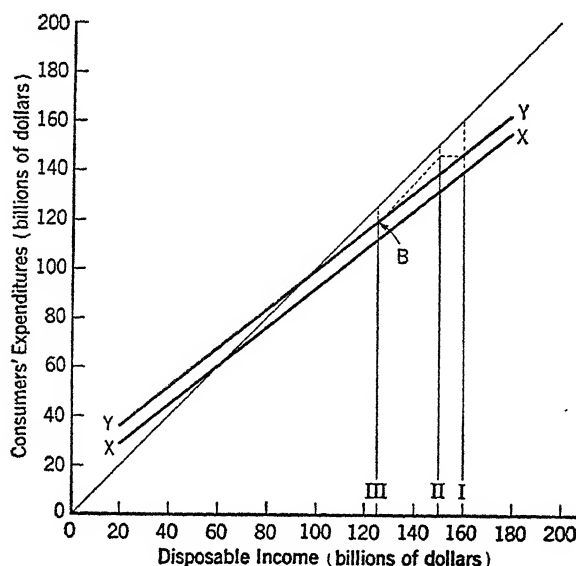


Fig. 13.

the upper income groups, the adjustment would be much more severe. The distribution of income would be made less equal instead of more equal, so that the consumption function would probably shift downward, intensifying the effect of the decrease in disposable income. Decreases in personal income taxes would have an opposite effect, since they would increase disposable income. Here again, the effect upon the distribution of income as well as upon its level must be taken into account. It is through these two elements that changes in personal income taxes can force the economy to readjust.

**SALES AND EXCISE TAXES.** Changes in sales and excise taxes, *i.e.*, in taxes that are levied directly on the sales of products on the market, will have repercussions on the economy through their effect upon individuals' income and on the prices of commodities. If the magni-



tude of expenditures by consumers, government, and investors was not changed with the imposition of a sales tax, gross national product would not change. However, on the allocation side of the national income and product account, the amount of payments made to the government would increase, so that less would be left to be divided between business saving and payments to individuals. If business saving

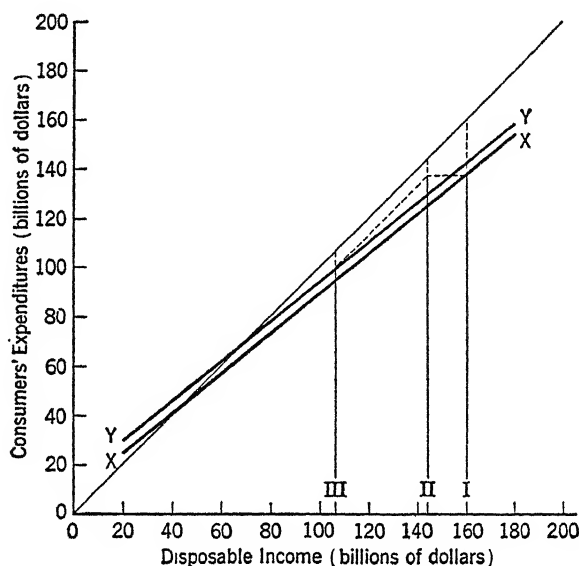


Fig. 14.

remained unchanged, income would be reduced by the full amount of the sales or excise tax. This does not, however, fully cover the situation, since prices will ordinarily react to the increase in sales taxes. An increase in prices would lead to an upward shift of the consumption function, indicating that individuals will spend more at a given level of income. Given all of these assumptions, the situation would be that shown in Fig. 14.

Position I shows the situation before the imposition of the sales tax. With the assumption that business saving remains the same, disposable income will fall by an amount equal to the sales tax. This is shown by position II. At the same time, however, the consumption function will shift, but not sufficiently to prevent a cumulative downward move-

ment of disposable income. The movement downward will continue until the new consumption function is reached.

In actual practice business saving probably will not remain unchanged; the sales tax will lead to a reduction in it as well as in the payments to individuals. In so far as this is true, the initial decline in disposable income will be smaller than the amount of the sales tax, and the total decline will also be smaller. In order to predict the exact effect of an increase in sales taxes it would be necessary to know precisely how much current personal saving and gross current business saving would be reduced by the tax. With this knowledge it would be possible to show the shift in the consumption function and the decrease in disposable income that would occur. A decrease in sales or excise taxes would, in general, have an opposite effect and would produce an upward movement.

**CORPORATE PROFITS TAXES.** A change in the corporate profits tax may affect the level and distribution of disposable income, the amount of gross current business saving, the level of investment expenditures that producers wish to make, or the level of prices in the economy. Any of these changes might set cumulative adjustments into motion. An increase in the corporate profits tax would have two opposing influences on disposable income. Producers may feel that keeping costs down is not so worthwhile as it was, since a smaller portion of any profit can be retained. For this reason they may be much more willing to grant wage increases, to use advertising and similar services, to maintain their plants in better condition, and to make expenditures for research. All these reactions will tend to increase the amount of disposable income in the economy. On the other side of the picture an increase in the corporate profits tax may have an effect upon prices and producers' expectations such that disposable income will fall. Producers may feel that the return they get after taxes is not sufficient to compensate them for the effort and risk involved in undertaking production at current prices. This feeling may lead to a general movement to raise prices and/or contract output, which, in turn, would cut disposable income. Furthermore, cutting undistributed profits may mean that some firms will be unable to undertake investment expenditures even if they should wish to. Such a reduction in investment expenditures would lead to cuts in production in the investment goods industries and a further fall in disposable income. Finally, dividends

might fall somewhat, and this in itself is a cut in disposable income.

The net effect of a change in the corporate profits tax is dependent upon the extent of each of these types of reaction. An increase in the corporate tax could set into motion a cumulative adjustment either upward or downward; it is even conceivable that the forces leading to an upward adjustment might exactly balance those leading to a downward adjustment, so that no change would result. A reduction in the tax, similarly, might produce a movement in either direction or no movement at all.

SHIFTS IN THE COMPOSITION OF TAXES IN THE ECONOMY. Even when there is no net change in the tax revenue collected by the government, a shift in the composition of taxes may have an effect upon the economy. If a sales tax were replaced by an income tax yielding equal revenue, for instance, the repercussions from the removal of the sales tax would not be exactly offset by the repercussions from the imposition of the income tax, and a cumulative adjustment would take place. In order to accomplish a change in the tax structure without setting up a cumulative movement, an increase or decrease in the total amount of taxes collected might be necessary. This factor is very important, since the government may be very much more interested in the effect that taxes will have upon economic activity than it is in the immediate revenue that will be forthcoming.

GOVERNMENT EXPENDITURES ON GOODS AND SERVICES. A change in the amount of goods and services that the government is purchasing from the market, other things being equal, will have the same effect as changes in consumers' or investment expenditures. An increase in the level of government expenditures would cause a cumulative movement upward, and a decrease in government expenditures would cause a cumulative adjustment downward. Frequently, however, changes in government expenditures will bring about offsetting changes in the business or individual sectors of the economy. A program of expansion of government expenditures on goods and services may have repercussions both on the desire of individuals to save or spend and on the desire of producers to make investment expenditures. The provision of such services to individuals as education and medical aid may remove an incentive for saving, but on the other hand it may make saving easier by effectively increasing real income, even though disposable income in money terms remains the same. An extension of

government services into these fields, therefore, might either lower or raise the consumption function of individuals, depending upon their specific reactions. Government expenditures on investment goods, if these investment goods are used for production in competition with private industry, may substantially lower the incentive of producers to make similar investment expenditures. It is conceivable that under certain circumstances an increase in government expenditures might set off a cumulative movement downward if it simultaneously caused a larger contraction in private investment expenditures. In like manner a decrease in government expenditures might have a stimulating effect if this reduction significantly altered producers' expectations and so increased the level of private investment expenditures.

GOVERNMENT OUTLAYS FOR SUBSIDIES, TRANSFER PAYMENTS, AND INTEREST PAYMENTS. Any change in government outlays other than on goods and services will also have considerable bearing on the equilibrium of the economy. A change in the amount of subsidy payments made to producers would be quite similar in its effect to a change in expenditures on goods and services, except that it would have no repercussions upon the consumption function and its repercussions upon the expectations of producers might be more favorable. Changes in transfer payments and interest payments made to individuals would alter both the level and the distribution of disposable income, so that the consumption function would be shifted. Government interest payments made to business partake partially of the nature of expenditures on goods and services and partially of the nature of subsidies; their effects will bear some similarity to each of these types of outlay.

CHANGES IN THE LEVEL OF GOVERNMENT RECEIPTS AND OUTLAYS. From the above analysis it follows that the maintenance of a balanced government budget is no assurance that a net cumulative movement will not be set into motion by changes in the policies of taxation and expenditure. A shift in the composition either of taxes or of expenditures may produce disequilibrium even though the total amount of the budget is not affected. Furthermore, equal increases in the receipts and the outlays of the government will not necessarily offset each other, so that the level of gross national product will not necessarily remain unaffected with such an equal increase in both sides of the budget. In recent years it has been argued that an increase in the

size of the government budget will tend to produce a cumulative upward movement in gross national product even though the increase in the government expenditures is met by an equal increase in revenue from taxes. For such a result to follow, the increase in government expenditures on the source side of the national income and product account would have to be greater than any decrease in consumers' or investment expenditures that was caused by the increase in taxes. In other words, a part of the tax payment is assumed to reduce saving, instead of all of it coming out of expenditures; the expenditures of the government would then more than offset the reduction in expenditures elsewhere in the economy. This multiplier effect of a balanced budget would, of course, not follow if the taxation or the government expenditure had such an adverse effect upon the expectations of producers that the actual reduction in consumers' and investment expenditures was greater than the increase in government expenditures.

The differential effects of different types of taxes and government expenditures become extremely important in connection with the determination of government fiscal policy. Should the government find it necessary to expand its expenditures during a period when it fears any upward pressure on the economic system, some types of taxes would be more useful than others in offsetting the increased government expenditures. For a given volume of revenue a sales tax might reduce consumers' expenditures more than an income tax, for instance. But it does not follow that the best tax in this situation is that which produces the greatest contraction in total expenditures in the economy per dollar of tax revenue. If this were the case, taxes on specific economic activities that were high enough to inhibit all production would have to be considered most effective. Obviously, other factors such as future economic repercussions, equity, and popular appeal should also be taken into account. Nevertheless, when a tax program is being drawn up, it is useful to consider the economic effects of different types of taxes. The objective of a balanced budget with a specific tax structure may be found to be inconsistent with the desire of the government to avoid starting a cumulative adjustment. Depending upon the relative effectiveness of the taxes chosen, it might be necessary to levy taxes that brought in more or less revenue than the amount of the government expenditures. Similarly, if government expenditures contract, a greater or a smaller contraction in tax revenue might be needed

to avoid a cumulative movement downward. A governmental policy of equating revenue and outlays will lead to stability only under the very special condition that the effect of the taxation exactly balances the effect of the government expenditures, and in most cases this will not happen. The government, therefore, will have to take into account separately the effect of the taxes it levies and the effect of its expenditures and on the basis of its over-all policy arrive at a combination of taxes and expenditures that it considers desirable.

### THE NATURE OF EQUILIBRIUM IN THE ECONOMY

The analysis up to this point has considered the mechanism of adjustment in the economy and the manner in which the economy can be forced into a state of disequilibrium that will lead to a cumulative adjustment in the level of gross national product. Emphasis has been placed upon the way in which the adjusting mechanism operates and upon the causes of disequilibrium in the economy. It still remains to be considered why, how, and where the cumulative process will end and what relation its ending has to the level of prices, output, and employment in the economy.

#### **Equilibrium in Relation to Prices, Output, and Employment**

When the level of gross national product changes, prices and/or output must, of necessity, also change. During any particular phase of the cumulative movement the reaction may be predominantly one or the other of these; which reaction is forthcoming is dependent upon the industrial organization of the economy and the degree to which resources are utilized. For the moment equilibrium will be considered the limit of a cumulative movement in either direction. This limit for a cumulative movement downward will be very different in nature from that for a cumulative movement upward.

**THE CUMULATIVE MOVEMENT DOWNWARD.** The process of contraction in the economy will lead to a lower output in some sectors and to a fall in prices in other sectors. Manufacturers faced with semirigid costs are forced to contract output when consumers reduce the amount of their expenditures. Agricultural producers, on the other hand, may continue to produce the same amount, so that the market prices of their products will fall. The cumulative decline in disposable income

and consumers' expenditures will be accentuated by the fall in the level of investment expenditures that will accompany it. Producers will be reluctant to extend or even maintain productive capacity in light of the contraction in consumers' expenditures, and they will try to reduce their inventories before they lose still more through the decline in the value of the goods they hold. In a deep, sharp depression such as that of 1932 gross current investment may fall almost to zero; in 1929 it had stood at \$16.6 billion, but by 1932 it had dropped to about \$1.1 billion. Gross current saving will, of course, fall to the same level, since actual gross current saving will always equal actual gross current investment. Gross current business saving dropped from \$10.4 billion in 1929 to \$1.9 billion in 1932, and current personal saving dropped from \$3.7 billion to —\$1.4 billion.<sup>2</sup> Since gross business saving ordinarily does not drop so much as investment, the decline in investment expenditures may make the cumulative movement continue until a level of income is reached at which individuals are forced to spend more than they are receiving. Such a situation is shown in Fig. 15.

Only when disposable income has fallen until consumers' expenditures are greater than their incomes can the low level of investment expenditures that producers will voluntarily make balance total voluntary saving (which is the sum of business and personal saving and the current government balance). Investment expenditures cannot drop much further than they did in 1932, so that current personal saving could be required to drop further only if the total of gross business saving and the current government balance were to increase.

Not every cumulative decline in income will continue until total investment and total saving drop to near zero levels. During the recession of 1938 producers reduced their purchases on capital account, but only from \$11.5 billion to \$7.4 billion. Gross current business saving continued at about the same level (\$6.7 billion), and current personal saving dropped from \$3.9 billion to \$1.0 billion. There were many factors that made this recession less sharp and less deep than the 1932 depression. (1) The economy in 1938 still had not recovered completely from the shortages created by the 1932 depression; the

<sup>2</sup> Gross business saving plus personal saving will fail to equal gross private domestic investment by the amount of the government surplus or deficit and of net exports.

need for replacement of equipment that had not been maintained during the depression had not yet been fully met, and investment expenditures could not be cut back so far. (2) There was a substantial increase in net exports from the United States, and this compensated somewhat for the decline in domestic markets. (3) The government increased its outlays by \$1.8 billion without increasing its tax receipts.

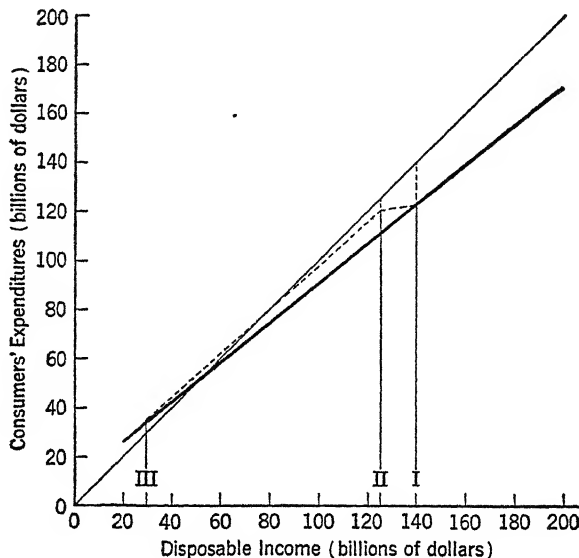


Fig. 15.

All these factors tended to offset the decline to some extent and to make it less severe, so that the downswing did not go so far as it had in 1932.

The limit of the cumulative movement downward, therefore, may come anywhere between the point at which it originates and a level of income at which both gross investment expenditures and gross current saving in the economy are zero. The greater the decline in the level of gross national product the greater will be the decline in prices, output, and employment. Under certain circumstances, as in 1932, the decline will not be stopped until almost the zero level of investment and saving is reached. But in other circumstances, when the economy starts from a situation of acute labor shortage, a short downward movement might possibly bring about a fall in prices and



an alleviation of the labor shortage without causing more than frictional unemployment in the economy. Any prophecy as to how far a decline will continue, therefore, must at least implicitly consider the action of the government, the change in foreign trade balances, the immediate past history of the economy, and its current position.

**THE CUMULATIVE MOVEMENT UPWARD.** A cumulative movement upward can start at any level of gross national product. When unemployment exists, it is probable that an increase in the level of consumers' expenditures will involve a rise in output and employment as well as in prices. Even in the manufacturing sector, however, the existence of serious impediments to increasing employment may after a certain point make a large portion of the upward movement take the form of price rises. The problem of defining the point where this will happen—the so-called level of full employment—has already been discussed. At different levels of economic activity different numbers of individuals will be willing to work. Possibly, with the level of gross national product rising, higher and higher wage rates might continue to elicit a larger labor force and permit more employment in the economy. Even if this does not occur, however, there is no reason why a cumulative movement upward should cease when full employment has been attained. The sharp rise in prices that would follow the attainment of the limit of employment might well be an incentive for producers to increase the level of their investment expenditures. In all probability, however, a point will eventually be reached beyond which producers will hesitate to attempt to increase capacity or to accumulate additional inventories, and at this point gross national product will have reached its greatest height. This is shown in Fig. 16.

In Fig. 16, point *B* might represent a full employment level of activity, but the process of adjustment will go beyond this point. On the other hand the cumulative rise from a low level of employment need never attain a level of full employment. The history of the period from 1932 to 1937 is an example of such a situation. The slow cumulative rise from 1932 to 1937 reached its peak while the economy was still at less than full employment. There may have been special factors that brought this particular period of cumulative rise to a close, but nonetheless it was brought to a close, and in the latter part of 1937 a cumulative decline set in. It is conceivable that the desire of producers to make investment expenditures might be so constituted that no

cumulative movement upward by the economy would ever reach full employment. As was true for the cumulative movement downward, the level of investment expenditures desired by producers will be conditioned by many factors, and this in turn will affect the height that a given cumulative movement will reach.

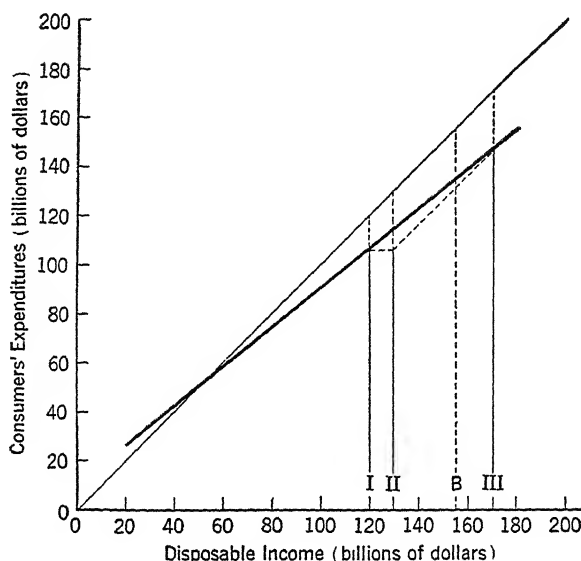


Fig. 16.

**THE ABSENCE OF CUMULATIVE MOVEMENT.** Since so many factors give rise to or condition the extent of cumulative movement, it is likely that at any given moment some forces will be pushing the economy up and other forces pushing it down. It is quite possible that the forces which tend to produce an upward cumulative movement will be exactly balanced by forces which tend to produce a downward movement, and no cumulative adjustment will take place. Such an absence of cumulative movement might be highly desirable at relatively high levels of economic activity; but if it occurs when the economy is at a low level of activity, the absence of change prevents a return to prosperity.

Although such an exact balance may be rare, the existence of a multitude of sometimes opposing forces will make the fluctuations in gross national product much less violent than the swings in the under-

lying forces themselves. The consumption function for the economy undoubtedly possesses greater stability than do the propensity to consume schedules of particular individuals. When one group of individuals in the economy decides to spend less of its income, the decrease may be partially or completely matched by other groups in the economy who decide to spend more, so that the change in the consumption function itself will be much less than the changes in individual propensities to consume. Similarly, a change in the distribution of income may be offset by changes in individuals' propensities to consume, which have an opposite effect, leaving the consumption function unchanged. For example, in a period of high and rising prices the distribution of income might be altered in such a way as to shift the consumption function downward. At the same time, however, many individuals would be unable to save as much out of their incomes as they had been accustomed to when prices were lower. These two reactions would tend to balance each other, and the consumption function might remain unchanged. Investment expenditures, similarly, are made by different groups of producers in different industries. At any one time investment in some industries may be stimulated while investment in other industries is dampened. This is especially true of competing industries; the development of a new product such as nylon will stimulate investment in certain chemical industries, but at the same time it will have a depressing effect upon the silk industry. The rise and fall of industries in the economy is at least in part a compensatory system of change, and it may take place without any appreciable change in the total level of investment expenditures. Even when the total level of consumers' expenditures or private domestic investment expenditures does change, there still may be no cumulative adjustment. A fall in expenditures of these types may be offset by an increase in the foreign trade balance or by a change in taxes or government expenditures. Continual change takes place in all sectors of the economy, and a cumulative movement will occur only when there is a balance of forces in a given direction. No one change in the economy can be said by itself to bring about a cumulative adjustment; such an adjustment occurs only because the balance of *all* forces leads in one direction. Past history reveals, however, that there have been few periods in which such a preponderance of forces in one direction or the other has been absent. The forces of

growth alone have in the past produced a generally upward movement in gross national product, but this upward movement has been broken periodically by intervals when downward forces have prevailed.

### **The Economy as an Explosive System**

The discussion so far has implicitly assumed that every upward or downward movement will have a limit. In actual practice, however, there have been periods when such a limit was not operative, and the cumulative movement continued until the economic system collapsed and the conventional standard of value was repudiated. After World War I such an inflation took place in Germany and resulted in a forced abandonment of the existing monetary system. The primary impetus to this inflation was the fact that the German government was spending greatly in excess of its revenues, thus producing a continual upward pressure. The upward movement to a large extent took the form of a price rise, and there came a point where individuals and businessmen alike expected these price rises to continue indefinitely. In such a situation money would buy less and less the longer it was held. Consumers therefore tried to spend their incomes as soon as they received them, so that it was no longer true that they became willing to save more as their incomes rose. Businessmen similarly wanted their assets in the form of goods rather than cash. No one in the economy wanted to hold money, but businessmen and individuals as a group could not reduce their holdings of money, since the quantity of money in circulation was being increased all the time. The more people spent in the attempt to get rid of money and obtain goods instead, the more they found that they were receiving as income. The more they received as income the more they had to spend. It was impossible for everyone to reach a satisfactory adjustment at the same time, and the attempt to reach an impossible goal set off the explosive price spiral upward. This spiral eventually led to a situation in which people refused to give up goods or services for money but resorted to barter instead. Money was repudiated as a medium of exchange and became worthless.

In terms of income analysis this phenomenon reflected a shift in the consumption function so that for individuals to be in adjustment they would have had to spend an amount at least equal to all the income which they received. Their striving to adjust their expenditures to the

level of their incomes produced the familiar cumulative movement upward; but because of the shape of the new consumption function, the increase in their incomes did not increase their desire to save, and the spiral upward continued indefinitely. This mechanism is shown in Fig. 17.

The original consumption function was *XX*. When individuals began to expect the price rise to continue indefinitely, they decided to spend

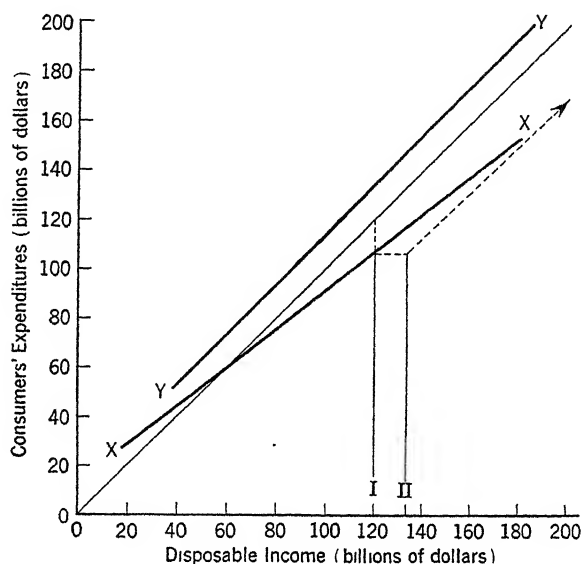


Fig. 17.

all their incomes—and probably all the money they had accumulated from past saving too—for goods before prices rose any more. The new consumption function can therefore be approximately represented by a line parallel to the 45-degree line on the chart and above it by an amount equal to the quantity of money held by individuals. Since producers at the same time and for the same reason would be trying to increase their holdings of goods, *i.e.*, their investment in inventories, the path of adjustment by individuals could not approach equilibrium, and the attempt to adjust resulted only in a continued increase in disposable income and in consumers' expenditures.

It is also theoretically possible for a downward cumulative movement to be explosive, but no such situation is recorded in the annals

of recent history. Should a continued fall in prices take place, expectation of further fall might increase the desire of individuals to save, leading them to postpone all possible expenditures in order to take advantage of later lower prices. Similarly, producers would have little incentive to invest, since by holding money they would expect to be able to buy more with it in the future. These circumstances are just the opposite of those discussed in the upward explosive spiral but are not so apt to take place in a modern economy with its existing social and economic institutions.

### **The Economy as an Unstable System**

Quite apart from the problem of explosive spirals, cumulative movements in the economy may very well never reach a limit in the sense of reaching equilibrium. The process of adjustment by itself will alter the point of equilibrium toward which the economy is moving, and the peak or trough of a cumulative movement may be only a phase in the changing conditions rather than the locus of equilibrium. Changing from an upward to a downward adjustment necessarily involves passing through a turning point, but it does not follow that this turning point can be considered a place of equilibrium. Instead, it may simply be the place where the forces causing upward movement are overbalanced by the forces causing downward movement.

**THE CUMULATIVE PROCESS UPWARD AND THE PEAK.** The upward movement from a depression may start out slowly; but as it continues, it will gain momentum and feed upon itself. Forces such as the acceleration principle and the expectation of better times will produce an increase in the rate of movement upward. Producers will wish to accumulate inventories. The economy will be on the road to prosperity. Coincident with this rise, however, forces are necessarily set in motion that oppose this upward movement. At first they are very weak; but as the upward movement continues, they gain strength, and at the same time the forces producing the upward movement become weaker. For example, during the period of rise goods and services of all kinds will be in great demand and producers will feel that it is a seller's market. This condition is, of course, what stimulates investment. The moment such investments are made, however, the basis for the growth of the downward forces is laid. As newly produced capacity comes into use, a greater supply of goods will suddenly appear on the

market and businessmen will begin to feel the effects of competition. In some industries—food processing, for instance—this result will occur faster than in others, since these industries are able to expand production more quickly. If the expansion of capacity has been large, producers will find that they cannot sell all their expanded output at the going prices. They may be selling more than ever before, but still not so much as they can now produce. The level of investment expenditures in these industries will fall off rapidly even though investment may still be increasing in other parts of the economy. As the upward movement progresses, more and more industries will feel the market go soft under them and less and less expansion will be carried on. Finally a point will be reached where the decline in investment expenditures will more than match the increase in consumers' expenditures and in investment expenditures in those industries which are still expanding, and an absolute decline will set in for all the economy.

There are many factors that condition the duration and height of a cumulative movement upward. Basic among these is the so-called period of gestation of investment—the length of time that elapses between the making of an expenditure on producers' goods and the actual purchase by consumers of products which have been made with these producers' goods. If this period is long, the movement upward will be prolonged, since the increase in actual output of goods will be postponed for some time, although the increase in profits, wage rates, and employment—all leading to increases in disposable income—will occur immediately. The duration of the upward movement will also depend upon the time lags that exist between a change in conditions and the reaction of consumers and producers to it. For consumers this period may be very short; a fall in disposable income may be accompanied almost simultaneously by a cut in consumers' expenditures, and even with an increase in disposable income only a very short time is probably needed for consumers to increase their expenditures. Producers, on the other hand, cannot control their output or the rate of their investment expenditures with anywhere near the same facility. Once the construction of a building has been started, for instance, it may be better to finish it even though the producer's expectations have worsened in the meantime. A great many projects, once they have been started, must be finished; the producer often is not free to change his mind once he has made the original decision. A

change in the rate of output of a plant may also require time. Plans have to be altered, labor must be notified, and the inflow of materials must be stopped. Until direct costs can be stopped, it is usually not profitable to contract output even if expectations do change radically. There is considerable evidence that output continues for a while at the same rate and that the accumulation of inventories is subject to a substantial lag behind changes in expectations. Commitments that have already been made will continue to supply deliveries even when it might be preferable from the point of view of the recipient to have less on hand. In other words, when consumers' expenditures contract, producers and distributors may involuntarily be forced to invest in inventories for a time before they are able to adjust. This sluggishness in reaction may well help to explain why at the peak of a cumulative movement upward the change in expectations does not always cause an immediate and precipitous drop in the level of income. During the period before producers can adjust, the economy will be in precarious balance or else in gradual decline; it may even continue upward slightly further. Only after adjustment can take place will the crash occur.

**THE CUMULATIVE PROCESS DOWNWARD AND THE TROUGH.** The cumulative movement downward will not necessarily be symmetrical with the movement upward. During a rapid decline there may or may not be forces that will put a floor under the fall before the economy reaches the point of zero investment expenditures. In the decline after 1929 no real floor existed; the decline stopped because the forces producing it played themselves out. The trough of 1932 was a period in which there were no very significant forces pressing for adjustment either way. The downward forces had reached their limit (virtually no investment and saving), and the upward forces had not yet begun to make themselves felt. Yet even this situation was not equilibrium, for the economy could not remain at this low level indefinitely. The process of inventory disinvestment obviously could not continue indefinitely; there would come a time when stocks would be exhausted. The replacement of some capital goods would eventually become necessary, when further postponement would impair the existing level of output. Barring an explosive situation it was inevitable that forces would develop which would produce a cumulative movement upward even in the absence of external stimulating conditions. Therefore, it



seems proper to consider the trough of the 1932 depression as a phase in the continuous process of adjustment rather than an equilibrium. The existence of the low level of output in conjunction with other existing conditions planted the seeds for the cumulative movement upward. Although it might have taken much longer, this cumulative movement upward would eventually have occurred even in the absence of any external stimulation.

The recession of 1938 was quite different in nature from the 1932 depression. By 1937 the economy had not yet reached full employment. Many of the forces that had helped to produce the cumulative movement upward were not completely overridden by the recession, so that there were strong forces opposing the downward movement. The failure of the expansive forces to disappear eased the immediate impact of the decline and provided a cushion that forestalled the complete collapse of expectations. It provided a floor so that economic activity did not have to fall to the level of zero investment expenditures. The period was one of fluctuation in the strength of opposing forces. The natural development of cumulative forces downward plus the effect of external conditions combined to produce a situation in late 1937 in which the magnitude of the downward pressure exceeded that of the existing upward pressures. But in the latter part of 1938 the upward forces again became dominant and an upward movement again set in. Neither the peak of 1937 nor the trough of 1938 was in any sense an equilibrium position; instead they were stages in a continuous process of change.

CUMULATIVE CHANGE AND EXTERNAL CONDITIONS. Although cumulative change in the economy may take place solely as a result of inter-related economic elements acting in sequence, the magnitude, duration, and direction of change in the economy will continually be altered by external conditions. One of the most spectacular of such external occurrences is war. Both World War I and World War II provided an extraordinary stimulation for the economy and in large measure were responsible for the duration and height of the upward movements in these periods. The course of economic events is completely altered by such major events. Even the postwar period bears the imprint of the war situation; the fact that there was a war will continue to affect the economy for a long period of time after it is over.

Other changes that are external to the economic process may be less

spectacular than wars, but they are nevertheless very important in explaining the path of economic changes. Economic conditions in foreign countries may have repercussions through changes in imports and exports. For example, during the depression of the thirties many agricultural countries were brought to a low level of economic activity because foreign countries were no longer willing or able to purchase the amount of food products that they had been accustomed to. Within an economy a large number of noneconomic forces can condition or alter the economic change that is taking place. The importance of inventions, changes in laws, institutions, and even social attitudes has already been mentioned. The establishment of a minimum wage law will have important economic effects, even though these effects may be difficult to ascertain in any empirical study. A change in the composition of the Supreme Court or the passage of such a law as the National Industrial Recovery Act will have very definite repercussions. The economist may not be able to predict their effects, but they are nonetheless important elements in the process of change.

## 12. Economic Policy and the Level of Activity

To a very large extent the economy envisaged by the traditional economic theorist is one without any over-all economic policies. Such a lack of economic policy, however, has seldom existed, either in the annals of history or in the actuality of modern economic systems. Each country throughout its history has seen a succession of economic policies come and go. In England, for instance, as far back as the Middle Ages economic policies relating to feudal land tenure were important factors in the economic life of the country and strongly influenced the course of future economic development. In the mercantilist period economic policies designed for the achievement of national wealth and power prescribed rigid control of economic activity. Even the *laissez-faire* philosophy that followed mercantilism—the philosophy that the unrestricted play of natural forces would bring about the best solution—involved an over-all economic policy: the promotion of as free an economic system as possible. The growth of imperialism later brought with it trade policies leading to the building up of a world empire and extensive overseas investment. Finally, the developments in Great Britain since World War I need little discussion to establish the existence of highly developed economic policies.

In a larger sense a nation cannot be without economic policies, even though these policies may not be crystallized in laws, regulations, or even conscious actions on the part of business or the government. These specific economic policies may conflict with one another, and they may be intended to fulfill entirely different purposes. This lack of consistency springs from the fact that on the one hand each

economic problem has many aspects and on the other hand each economic policy will have repercussions in more than one sphere of economic activity. The patent laws, for instance, may tend to promote inequality of income, whereas the income tax levels such inequality; yet both of these measures can logically be supported at the same time, since they have important aspects aside from their repercussions on the distribution of income. The complete absence of economic policies would entail the absence of an economic system; in any complex economic system the apparent lack of a specific coordinated policy represents in itself a conscious or unconscious choice among alternative modes of behavior. Letting things work out as they will is very definitely an over-all economic policy.

This chapter will discuss only those economic policies which are significantly related to the level of economic activity. Rather than attempting to suggest any over-all integrated group of policies, the discussion will be confined to those elements which to date have been the objects of conscious policy decisions in the economy.

#### THE PROBLEM INVOLVED

Violent changes in the level of economic activity do pose problems of economic policy; this is evident from the experience of the United States during the period 1929 to 1948. Before a detailed analysis of possible alternative policies can be made, it will first be necessary to consider two questions: what the problems raised by changes in the level of activity are, and what basic objectives exist upon which general agreement can be obtained.

Policies that are, in effect, expressions of economic philosophy are involved even in the power of the government to tax, the laws of incorporation with limited liability, and the rights of private property. There are few individuals who feel that it is a matter of indifference what economic philosophy the nation adopts, so that specific economic policies will arouse intense interest. It does not necessarily follow, however, that different economic measures will imply different basic philosophies; individuals holding the same basic views may disagree about their interpretation of specific situations or about the effects of given economic policies. Conversely, there are a great many eco-

nomic policies that people with widely divergent economic philosophies would all be willing to accept.

### **The Significance of Changes in the Level of Activity**

The fluctuations in the level of economic activity that took place from 1929 to 1938 had very important effects upon the economy. The depression of the thirties disrupted economic activity. Unemployment was widespread. Individuals who had been employed in producing goods and services were thrown out of work, and many more were forced either to work part time or else to accept less productive jobs than those they had previously held. The unemployment figures understate the actual maladjustments that occurred in people's lives: many a skilled carpenter or machinist was forced to turn to subsistence farming or to take a job as a night watchman in order to get enough to eat. It was not only the inefficient and the indolent who were left without work. When a plant shut down completely—as many plants did—all its employees were forced on the already glutted labor market, and the efficient and the inefficient alike suffered. Relief was necessary to prevent those out of work from starving. In spite of relief payments most of the people who were unemployed and many others as well had their life savings wiped out either in the attempt to keep off relief as long as possible or in the preceding financial crash. Dissaving was widespread. Consumers as a group were dissaving more than they were saving, so that current personal saving for a period of three years was negative. In 1932 it amounted to minus \$1.4 billion. This widespread using up of past accumulations of savings had repercussions in later periods, when these families were unable to pay for higher education for their children or else had no money saved up for their old age and retirement. As is true of any social upheaval, the depression proved disastrous to many different groups in the economy for different reasons. A great many children not only were ill-fed but grew up in homes where economic pressures prevented happy family life. Many were forced to leave school early in order to look for what part-time employment they could find to help ease the poverty of the family. Even if no opportunities for any kind of employment were open, higher education was impossible; living at home was cheaper, and children past the minimum age could collect unemployment relief. High-school and college graduating classes had little hope of

getting any jobs whatsoever, and what jobs they did find were not adequate to get married on. The birth rate declined rapidly in the thirties, and this decline was due partly to the fact that children imposed an additional economic burden. In some cases the depression resulted only in the postponement of children to a later period, but in other cases it resulted in permanently smaller families. Finally, people who normally would have been at the height of their earning power during this period became unemployed, placing the burden of their support on others.

Unemployment is not the only source of inequity in the economy during periods of depression. When the level of gross national product falls, the prices of some products will fall very much more than the prices of other products. Farmers may be forced to sell their products at ridiculously low prices, whereas other producers may be able to restrict their output so that their prices do not fall so much. Falling prices are inequitable in another respect: fixed debts, *e.g.*, mortgages, remain unchanged in money terms, even though all prices in the economy, including earning capacity, have fallen. Not everyone will be made worse off by the depression, of course. People living on fixed incomes such as pensions or annuities will be better off because of the fall in the cost of living. Similarly, anyone with money in the bank will find that it will go further and buy more in the depression.

Depression also entails the operation of the economy at a level far below its capacity without apparent reason. Goods are desperately needed, yet there is idleness, and this idleness is a waste of labor and other resources, which could be used to yield economic goods. Furthermore, in depression the economy lives off its capital produced in the past and does not attempt to replace it. Depreciation of capital goods in such a period is not solely from use; depreciation goes on even when the machines are idle. The loss in potential production during a depression cannot be calculated simply by making an estimate of what could be produced if those who profess to be unemployed were employed. The war experience of most of the economies involved shows that capacity of an economy is not reached as soon as its labor surplus disappears. Labor shortages themselves will lead to the development of laborsaving and capital-saving devices that will vastly increase the productivity of the nation. Furthermore, integration and coordination in an economy cannot be achieved over night.

Sustained high-level activity is necessary; and when there are violent changes in the level of activity such as are implied by deep and sharp depressions, it may never be possible to achieve effective coordination of economic processes.

Not only depression will have disruptive effects upon the economy. The extremely high levels of activity during World War II and the immediate postwar inflation were not without their undesirable results. In wartime, of course, the resource allocation pattern of the nation was subject to abnormal war demand, but any period of high level activity is likely to be a period of sellers' markets, when almost anything put on the market will be bought. There is therefore little incentive to produce goods of high quality. Competition between producers for markets will probably not be strong, and more attention will have to be given by producers to the problems of getting adequate supplies of materials and labor than to selling the final product. The attention given to the supply situation, furthermore, will often result only in an intensification of the struggle for the limited quantity of resources that exists, so that the price will be driven up further.

An inflationary rise in prices will produce much inequity. Many individuals' incomes will not rise so fast as prices, so that they will be forced either to lower their standards of living or to use up their past accumulations of savings in the effort to maintain their consumption. This will, of course, be true of all those who gain from the fall in prices in depressions—persons receiving pensions, annuities, or other fixed incomes and to a large extent those holding white-collar positions whose incomes change only very slowly. Unless there is a large increase in productivity, wage earners may also find that they can buy less with their take-home pay. The farmer, however, will be far better off in such a period than in any other. Not only will he be receiving high prices for his products, but his fixed mortgage debt will be relatively less important, since prices have risen. Industrial profits will also rise sharply, although the portion of such profits paid out in the form of dividends and interest payments probably will not rise equivalently.

Both upward and downward fluctuations in the level of activity, therefore, will have undesirable repercussions. These adverse effects can be classed in two groups: waste of resources and inequities. Depressions will waste resources not only through the failure to make

productive use of available labor services but also because a significant part of the physical capacity built up during the final stages of the previous prosperity will waste away in idleness. Inequities resulting both from depression and from inflation may be such that there will be continual discontent and unhappiness in the nation. Adequate adjustments by individuals may be impossible when circumstances change faster than the adjustment can take place, and the final result may be fear based on the lack of security.

### **Objectives of Economic Policy**

The economic objective of a nation is often stated in very broad terms as the maximization of the welfare and happiness of the people of that nation. Such a definition is too vague and general, however, to be very useful as a guide for a specific policy. On the other hand, economic objectives are often confused with those particular policies which are believed to be the most useful: striving for a "free economy" or, at the other extreme, complete planning of production. But these specific policies tell little about the objectives behind them. A thoroughgoing discussion of objectives and policies is neither possible nor desirable in this chapter. Instead, several possible objectives relating to the level of activity in the economy will be discussed, and in the following section some of the current policies that are proposed for carrying out these objectives will be considered.

One of the primary objectives of economic policy in the nation is the prevention of periods of general unemployment. Such an objective does not need to be so far-reaching as to guarantee everyone a job all the time; it is well recognized that frictional unemployment will always exist in the economy and that there are some individuals who are probably not capable of holding a job. But mass unemployment is an entirely different matter; if periods of widespread inability to find jobs could be prevented from taking place, much of the insecurity and inequity produced by fluctuations in the level of activity could be abolished. This objective of full employment goes or should go beyond the mere provision that everyone who loses a job is given another for which he may or may not be suited. It is sometimes suggested that no more than this be required of substitute employment—that the government set unemployed people to raking leaves or digging holes and filling them up again or some other unproductive task. But such



measures may well destroy the morale of the individuals who are so employed, leaving them with the feeling that they have no place in society. Instead of such makeshift measures what is needed is the continuance of permanent, useful employment.

A second possible economic objective of the nation is that of general price stability. Here again, this does not mean that no price should ever change but rather that the cumulative price increases and decreases which have occurred in the past should be eliminated as much as possible. Violent changes in the price structure not only lead to inequities but also require the economy to make fundamental adjustments in its patterns of resource allocation. Such adjustment is difficult to make; and when changes in the price structure are rapid and extensive, confusion and chaos may follow. The economy will be in a state of continuous and violent adjustment, and no approach to equilibrium can be achieved. The lack of general price stability leads to a degree of uncertainty that may, in fact, prevent the development of a healthy economy.

A final objective of economic policy is the efficient allocation of resources. By combining labor, capital goods, and natural resources in various different ways, different assortments of goods and services can be produced. An efficient combination of labor, capital goods, and natural resources is one that produces the particular assortment of goods and services most desired by consumers. Efficiency in this sense requires not only efficient production techniques so that no productive resources are wasted but also correct decisions about what particular goods and services should be produced. Carried to its logical conclusion this objective would even include leisure as an economic good, giving due consideration to the preferences of individuals regarding the number of hours they wish to work relative to the goods they receive. Most economic policies will have an effect upon resource allocation patterns, and this effect must be taken into account in evaluating such policies. A policy that leads to the allocation of resources without reference to consumer preferences is undesirable even though it has a beneficial effect upon the level of employment and the stability of the price level, since the welfare of the economy can be increased by a better solution to the problem of the combination of resources.

Some economists feel that these objectives are unobtainable or at

least incompatible with each other. This position is based upon the belief that fluctuations in the level of activity in the economy are a necessary part of natural economic growth, and that if these fluctuations are eliminated the economy will become completely static and rigid. The period of cumulative upswing, they feel, is essentially a period of growth in which investments are made that will mature in a later period. The downswing is a period of readjustment caused by the increased abundance of goods, and it is argued that this readjustment is necessary before the economy can embark upon another wave of progress. Yet on the other side of the picture it has been pointed out that letting the economy endure the cumulative adjustments may be no solution to the problem because of the magnitude of these cumulative movements. Instead of bringing about readjustment, fluctuations as great as the depression of the thirties may instead, because of the unemployment, inequity, and uncertainty that they entail, create so unstable a political situation that the whole economic system would be in jeopardy.

Theoretically, both of these arguments are valid; it is only through further study and more empirical evidence that it would be possible to choose adequately between them. However, the political temperament of the period is such that few people are willing to accept the conclusion that nothing can be done to alleviate the unfortunate consequences of fluctuations in economic activity. Should the validity of this conclusion be accepted by all, it would, of course, be unnecessary to examine economic policy further, since it would necessarily follow that undesirable though the consequences of doing nothing may be, no alternative policy would be any better. With this caveat, therefore, it will be useful to examine a number of proposed economic policies in some detail.

#### ECONOMIC POLICY AND THE LEVEL OF ACTIVITY

Economic policies obviously will have to be quite different in different phases of the cumulative movement up and down. There are a few measures that would be helpful in both the upswing and the downswing, but for the most part this is not true. An economic policy designed to stimulate activity, for instance, might be appropriate in one period, whereas another period would call for some sort of re-

strictive measure. The following treatment will consider (1) measures that may help the economy to stop a cumulative movement downward and initiate a movement upward. (2) The problem of preventing or controlling inflation will be considered, and (3) measures applicable to the maintenance of stability in the economy will be discussed.

### Economic Policy and Recovery from a Depression

In income analysis terms a depression is essentially a cumulative decline in the level of gross national product. Recovery from a depression can be secured only when the cumulative decline is stopped and the level of gross national product is started on its way upward again. The level of gross national product can be increased only if its individual components—consumers' expenditures, gross private investment expenditures, government expenditures, and net foreign investment—in turn are raised. As the national income and product account given in Table 44 shows, in 1932 all of these components had reached extremely low levels.

*Table 44. National Income and Product Account, 1932 \**

(In billions)

Allocations	Sources
Capital consumption allowances . . . \$ 7.7	Consumers' expenditures . . . \$49.2
Indirect taxes . . . . . 6.8	Gross private investment expendi-
Social insurance contributions . . . . 0.3	tures . . . . . 0.9
Wages and salaries . . . . . 30.5	Net foreign investment . . . . . 0.2
Income of unincorporated enterprises	Government purchases of goods and
and rental income of persons . . . 7.4	services . . . . . 8.1
Net interest . . . . . 5.4	
Dividends . . . . . 2.6	
Corporate profits taxes . . . . . 0.4	
Undistributed profits . . . . . -6.0	
Adjustments to allocations . . . . . 3.3	
Gross national product . . . . . \$58.4	Gross national product . . . . . \$58.4

\* Source: "National Income," supplement to *Survey of Current Business*, July, 1947, Tables 1 and 2, p. 19, and Table 4, p. 20; and *Survey of Current Business*, July, 1948, Tables 1 and 2, p. 16, and Table 4, p. 17, U.S. Department of Commerce.

Economic policies can best be considered in terms of the effects that they will have upon each of these components. In some circumstances

an increase in a particular component will set into motion a cumulative movement upward via the multiplier effect, the acceleration principle, and the effect of induced investment. But this result will not follow if an increase in one component should be offset by a corresponding decrease in some other component. For this reason all the components must be considered simultaneously.

**MONETARY POLICY.** Monetary policy has long been used as a weapon with which to fight depressions. An unsound banking and monetary system can be a major factor leading to financial collapse and so can greatly intensify the problem of adjustment. If the system is so organized that banks are forced to call in loans and contract credit on the brink of a depression, there will be a tremendous drive for liquidity, and financial panic may result; banks will close, depositors will lose their money, and the monetary system of the country will be endangered. The possibility of serious financial crisis brought about by monetary causes has been substantially lessened in recent years, and much has been done to ease financial adjustment in depression by the advent and growth of the Federal Reserve System and the Federal Deposit Insurance Corporation. Sound banking policy, however, cannot stop or cure a depression; it can only prevent it from being made worse by financial collapse.

Monetary policies of a more specific nature have often been employed or suggested. It is within the power of the monetary and banking authorities to influence the rate of interest and the availability of capital, and these powers have often been considered to be tools of monetary policy. Lowering the interest rate and making capital more readily available should, it is argued, increase the level of investment expenditures. In normal periods the level of investment expenditures might very well respond somewhat to these measures, but their effectiveness in periods of depression cannot readily be determined. For most producers interest is a small part of the total cost of investment, so that lowering the interest rate would change total costs only very slightly. Furthermore, although the banking authorities can make capital available by increasing the excess reserves of banks, they cannot thereby ensure that the banks will be willing to lend or that, even if the banks are willing to lend, producers will want to borrow. In a period of depression most producers feel that virtually all investment will be unprofitable, and they cannot be persuaded to undertake any

additional ventures regardless of how low the interest rate is or how easily capital can be obtained. When producers are making losses, they ordinarily do not want to expand. For these reasons manipulation of interest rates and increasing the availability of capital is not likely to be very effective in combatting depression. However, these measures may be very useful once the upswing begins and producers have decided that investment expenditures may again be profitable. Direct monetary policies, therefore, although not sufficiently powerful to bring about recovery from a depression, may be an aid in the early stages of the upswing.

**TAX POLICY.** Taxes, as was pointed out in Chap. 11, can affect the level of both consumers' expenditures and investment expenditures in the economy, and for this reason tax reductions have been advocated as an economic policy to stimulate recovery from a depression. The effects of reductions in different types of taxes will be different, so that each of them must be considered separately.

A reduction in personal income taxes will increase disposable income; and according to the analysis presented in connection with the consumption function, the level of consumers' expenditures will rise correspondingly. The extent to which an income tax reduction will raise the level of consumers' expenditures will depend to a great extent upon what income groups receive the tax reduction. Should the higher income groups receive the major part of the tax reduction, the result would probably be that the personal saving of these groups would rise with no very great change in consumers' expenditures. But reduction of taxes on the lower income groups would probably increase consumers' expenditures by almost as much as the amount of the tax reduction. However, until the war period the income tax burden on the lower income groups was not significant, so that any reduction in the tax rate was automatically a reduction for the upper income groups. This effect is, of course, accentuated by the fact that in a depression the average level of personal incomes falls sharply. In recent years effective income tax rates have risen and the level of personal income has also risen, so that the policy of reducing income tax rates would be more effective now than it has been in the past, but it still remains true that there is a very definite limit to the stimulating effects that a reduction in the tax on personal income can have.

The effect of a reduction in corporate profits taxes, as was shown

in the preceding chapter, is much more difficult to predict. Although such a reduction might normally stimulate producers to make investment expenditures, this reaction might not be forthcoming in a depression. Low taxes will not turn a loss into a profit. Furthermore, the tax rates in which the producer will be interested are the tax rates that will be in effect when the investment matures and begins to yield income. The recognition that the change in the corporate tax rate is for the purpose of stimulating recovery and that once recovery is achieved higher rates will be restored may prevent the reduction from having its desired effect. Tax policy based on reduction in the corporate tax, therefore, is not likely to have predictable results; in some periods the stimulation of investment might be far greater than the amount of the tax reduction, but in other periods the reduction would be ineffective in much the same way that a lowering of the interest rate may be ineffective.

Reductions in sales and excise taxes will have repercussions on both producers and consumers. If the tax reduction is matched by an equal fall in the prices that consumers have to pay, consumers will find that they can purchase more goods for the same expenditure, and there will be an increase in the receipts of producers after sales taxes. If prices should not fall the full amount of the reduction in sales and excise taxes, the profit margin of producers will increase, so that production will be more profitable. Whichever reaction follows, therefore, reduction of sales and excise taxes will have a stimulating effect even in the depths of the depression. Consumers will find that their money will buy more goods, or producers will find that the profitability of production has increased. Per dollar of reduction in revenue it seems probable that a cut in sales and excise taxes will have a greater stimulating effect than cuts in any other kind of taxes. However, such reductions require considerable legislative action and are not susceptible to flexible change. Furthermore, continuous change in taxes of this type might introduce an additional element of uncertainty in that neither producers nor consumers would know what they could count on in the future.

**GOVERNMENT EXPENDITURE POLICY.** Changes in the amount and type of government expenditures may have significant repercussions on the economy. In the following analysis of the repercussions of increases in different kinds of government expenditures it will be assumed that

expenditures are increased without an equivalent increase in tax revenues to finance the additional outlays. The purpose of this assumption is to isolate the effects of the increase in expenditures; it may be considered desirable to finance the increased expenditures out of tax revenues, but the effects of any change in taxes must be considered separately from the effects of changes in expenditures. In order to see what the effects of increasing expenditures alone would be, it will be assumed that these expenditures are financed either by borrowing idle funds or through a general expansion of bank credit.

One of the most common forms of increased government expenditures in a depression is the payment of relief to unemployed persons. Such relief may take the form either of actual money payments or of the distribution of such things as surplus food. In either case the level of expenditures in the economy will rise, and this increase may help to generate a cumulative movement upward. It does not follow, however, that the increase in relief payments or in the purchase of surplus goods to be distributed will always result in an increase in total expenditures of exactly the same amount. Some of the individuals who receive the relief payments may have past accumulations of savings, which they will not have to use up so fast as they would without relief. Individuals who are supplied with surplus commodities by the government may be forced to spend less of their own money in order to maintain an acceptable standard of living. It is sometimes further contended that the payment of relief deters some individuals from taking jobs at wages that are below the level of relief. This is undoubtedly true, but it does not necessarily follow that relief payments are therefore not useful in stopping the cumulative movement of income downward. Continued fall in wage payments will only lead to further cumulative adjustment downward, and the final level of employment may be very much lower than it would be if a floor is placed under wages by the payment of adequate relief to those out of work. Such relief payments would maintain the purchasing power of the economy at a much higher level, and the extent of the cumulative movement would be much less. A much more serious charge is that relief payments, if they extend over a long period of time, may be harmful to morale and destroy the incentive to work. In this connection the effect of the dole in the depressed areas of south Wales is frequently cited. On the other side of the picture, however, is the obvious con-

sideration that the lack of relief payments in a situation where unemployment is more than simply frictional may have an even more destructive effect upon morale. The only adequate means of maintaining morale, of course, is the prevention of general unemployment.

The government may also increase the amount of its transfer payments other than direct relief. Transfer payments of this type include such outlays as bonuses paid to veterans and the refund of taxes previously paid. During World War II some countries made use of compulsory savings plans, borrowing from individuals according to the same general principles as those upon which taxes are levied. With such compulsory saving, the government can reimburse the individuals from whom it borrows whenever it wishes and so has a method whereby it can increase disposable income through transfer payments during the periods when such an increase is needed. The increase in disposable income derived from transfer payments will stimulate consumers' expenditures; the extent of the stimulation will depend upon the income groups to which the payments are made. Objections to the use of transfer payments as an economic policy often center about the problems of equity that are involved. Bonuses and tax or compulsory savings refunds made primarily to create additional disposable income in the economy may not necessarily go to those who merit them most or who have the greatest need for them. Yet from an overall point of view, if such payments help lift the economy out of a depression, it may be to the advantage of all that they be made.

Finally, increased government expenditures may take the form of public investment or public works. The government performs many useful functions that require continued expenditures; such things as highways, public buildings, conservation, and national defense constitute the major part of the government's budget. It is often suggested that expenditures in these and similar fields, *e.g.*, public housing, be extended during a depression, so creating useful employment in the economy. An increase in government investment expenditures may not always result in an equivalent increase in disposable income, however, since the effect of such government action upon the level of private investment must also be taken into account. Many kinds of government expenditures that have been suggested would be in direct competition with private business, and an increase in government activity might lead to a more than equal contraction in private investment



expenditures. This reaction may be especially prevalent in the first stages of the upswing when business is not sure whether recovery has really started; it may be hesitant to enter fields where government competition may prove disruptive. There are very few fields of investment that the government can enter which will not thus compete with some phase of private industry. Even though the direct output of the government does not so compete, competition for labor and materials may be such that private industry will be discouraged from undertaking ventures that it otherwise would have attempted. For instance, should the government embark upon a construction program, its absorption of labor and materials might force prices in this area of the economy up so that they are out of line with the rest of the price structure, and the relatively high construction costs might prove to be an impediment to private investment expenditures if the latter were in part dependent upon a low-cost situation for their initial stimulus.

Before leaving the subject of government expenditure policy it will be useful to point out two over-all objections that have often been raised to the use of government expenditure as a method of getting out of depression. In the first place, a large program of government expenditure initiated when private investment is virtually nonexistent may succeed in getting the economy back to the level of full employment, but there is no assurance that private industry will then voluntarily make sufficient investment expenditures to keep the economy at this level. It is possible that in order to maintain a high level of activity in such a situation, the government would have to keep up its deficit spending indefinitely; otherwise, the moment it contracted its expenditure, the economy would start a cumulative adjustment downward. Whether or not such a situation would exist is largely dependent upon the reason why private investment expenditures were initially so low. If the original cause persisted, or if the increased level of government expenditure should significantly impair the willingness of producers to make private investment expenditures, lasting full employment could not be achieved by a temporary increase in government expenditures. Instead, if expenditure policy is to be used to maintain full employment, permanent action might be necessary. Transfer payments, for instance, would become a permanent source of income for large groups in the economy; these groups would be receiving income even though they were making no contribution to

national output of goods and services. If, alternatively, public works expenditures were expanded, more and more of the nation's economic capacity might be absorbed by the government, and its production might not yield an allocation of resources that would be as efficient as that of private industry producing for consumer markets.

A second general objection to continued government deficit spending centers around the problem of financing this expenditure. Deficit spending in modern economic systems is financed by selling government bonds to individuals and banks. With appropriate central bank controls, such credit creation can continue indefinitely so that the government will never be at a loss for funds, but this process raises other problems. The larger the national debt the larger will be the interest charges on this debt, and certain groups of individuals and financial institutions in the economy will be the recipients of increasing amounts of income that is not an essential part of the productive processes of the economy.<sup>1</sup> This process raises serious problems of equity.

Increased government expenditures, therefore, may be successful in counteracting a depression, but their use raises a number of problems. The future implications of any government policy that is undertaken must be considered as well as its immediate effects. This does not mean, however, that government expenditure necessarily should be avoided—if the alternative is the disaster that may accompany a serious depression.

**FOREIGN TRADE POLICY.** In the past history of economic depressions foreign trade policies have frequently been used as an aid in restoring prosperity. Tariff barriers, licensing of imports, subsidization of exports, and devaluation of the currency have all been used in the attempt to provide a setting more favorable to a cumulative movement upward.

Tariff barriers and import licensing have been used to exclude foreign goods from the domestic market. By this procedure it is hoped at least temporarily to divert to domestic goods expenditures that would have been made on foreign goods. Tariffs may have the effect of making foreign goods more expensive than domestic goods, so that pur-

<sup>1</sup> In the calculation of gross national product, interest on the national debt is not considered to be payment for a productive service. For further discussion of this subject, see the appendix to Chap. 3.

chasers will prefer to buy domestic products. Import licensing is usually intended to limit the type and amount of foreign purchases; it can also be designed to prevent the purchase of specific foreign goods that compete with domestically produced goods.

Foreign trade policy can also encourage a cumulative movement upward by focusing upon increasing the amount of exports instead of upon limiting imports. Payment of subsidies may make producers more willing to produce goods for sale abroad. The subsidy plus what can be obtained from the sale of the goods abroad may be enough to encourage the production of goods that without the subsidy would not have been profitable, and the resulting hiring of labor and purchase of raw materials will stimulate the domestic economy.

Finally, devaluation of the currency may be used both to stimulate exports and to limit imports. When the exchange rate is lowered, domestic goods will become cheaper for foreign purchasers and exports will be stimulated. At the same time foreign goods will become more expensive for domestic purchasers, and imports will tend to be restricted. Devaluation thus will produce a foreign trade balance that is more favorable to a cumulative movement upward.

These foreign trade policies, however, cannot be considered only in terms of their repercussions upon the domestic economy. A foreign trade policy intended to stimulate exports and limit imports will have immediate effects upon the countries with which trade is carried on. A limitation of imports from foreign countries may prevent these foreign countries from purchasing exports unless adequate supplies of foreign exchange are made available through loans. And even if such funds are made available, the limitation of imports may still have an effect upon the stream of exports. The change in the import-export balance may not be in accord with the economic policies of the other countries concerned, and they may attempt to prevent the change or even gain an advantage by applying the same policies in reverse. It is impossible for all countries to have a net export balance at the same time, and widespread attempts to obtain such a balance will result only in the application of competitive foreign trade policies, which will usually restrict international trade. When one country limits its imports, exports of other countries will decline, and in order to regain their desired net export balance these countries may, in turn, limit their imports. This will have repercussions on the exports of the first

country, so that its net trade balance may be no better than it was in the beginning, but the volume of international trade will be lower. Competitive export subsidies cannot be any more successful in creating a more favorable trade balance for all of the countries concerned, and they may lead to the absurd situation in which a country is paying more for imported goods than the prices at which similar domestically produced goods are exported to foreign countries. Devaluation of currency similarly can become competitive and may finally lead to a complete demoralization of international trade.

Because of the likelihood of such competitive reactions these trade policies may well not be successful in stimulating recovery from depression, but situations do exist in which they will be helpful. If two countries found themselves in very different economic positions, their trade policies could be made to complement each other. For instance, a depression in one country and an inflation in another country would permit the institution of a common policy that would benefit both countries. By increasing net exports the first country might encourage a cumulative movement upward, and by increasing net imports the second country might provide more goods for its expanding volume of expenditures. Unfortunately, the happy coincidence of complementary economic situations in different countries is not a common occurrence. Because of the mutual interdependence of economies, periods of depression and prosperity are usually world-wide. The programs of economic planning that are being instituted in some countries may alter the situation in the future, however; such countries may welcome a policy of cheap exports on the part of the United States, since it would mean more economic goods for them.

**PRICE AND WAGE POLICY.** Depression always arouses a great deal of concern over the behavior of prices. On the one hand it is argued that stability cannot be reached until the downward movement of prices is stopped and that even a concerted movement to raise prices would be beneficial. This was the philosophy of the National Industrial Recovery Act during the depression of the thirties. It was argued that raising prices would increase the profit margin, so that producers would be stimulated to increase production and hire additional labor. Opponents of this view, on the other hand, argued that the increase in prices would limit the amount consumers could purchase and that this would restrict production and cause more unemployment, so that the

movement downward would be intensified. The encouragement of price cutting will not necessarily meet this latter argument, however, since this also may discourage production. The increased purchasing power of consumers' incomes due to the fall in prices may be more than offset by the fall in the absolute amount of their incomes caused by the fall in prices and output. Sufficient empirical evidence is not available to indicate which of these two arguments is most likely to be valid in any particular circumstance.

Diametrically opposed wage policies have also been recommended as a stimulus to the economy. The classical economists maintained that lowering the wage rate would create fuller employment because producers would be willing to hire more labor at a lower wage rate. When the effect of such behavior upon income is considered, however, this argument does not necessarily follow. A lower wage rate may not lead producers to hire a significantly larger number of workers, so that the new wage bill—the total amount of wages paid—may be smaller than the old. A decline in consumers' expenditures would then follow, and the cumulative movement downward would be intensified. For this reason increases in the wage rate have often been advocated, but again it may happen that the unemployment resulting from such an increase in the wage rate would make the total wage bill decline. Without actual empirical knowledge of the manner in which the economy can be expected to react to a change in the wage rate, it is not possible to make any valid predictions.

### **The Control of Inflation**

The problem of controlling an inflation will obviously require measures that are opposite in nature from those proposed for recovery from depression. Some of these measures follow so obviously from the discussion of depression policies that they need only be mentioned. A cut in government outlays might help to ease the inflationary situation, either by lessening the quantity of goods and services removed from the market by the government or by reducing the transfer payments made by the government to individuals. Foreign trade policies can be employed to stimulate imports and discourage exports, but problems of repercussions upon the other countries will continue to be important. Certain other economic policies designed to control an

inflation bring up more complicated problems and need to be studied in greater detail.

**CREDIT CONTROL POLICIES.** The traditional weapon against inflation has been the control of credit. It is argued that much of the inflationary pressure which is felt is the result of too much credit creation. In boom periods producers borrow to carry their larger inventories and to purchase durable goods. Consumers also buy goods on credit, either on the installment plan or by direct borrowing. Restriction of credit is aimed at reducing the expenditures of these groups and so lessening the pressure on the available supply of goods and services. It has frequently been proposed that credit be restricted by raising the interest rate. Borrowing will then be more expensive, and it is argued that people will not want to borrow so much. However, it is doubtful whether in an inflationary period raising the interest rate will discourage many borrowers. Even if the interest rate could be raised high enough to drive some borrowers from the market, it would not necessarily have the desired effect. As long as there is a chance for a speculative profit from rising prices, a high interest rate will not deter speculators, nor is it likely to influence purchasers of consumers' goods. The only limitation of borrowing is likely to be on the part of producers, who will curtail their expansion of capacity. In other words raising the interest rate may drive useful borrowing from the market, leaving the amount of speculative borrowing and consumer credit unchanged.

Since the interest rate alone is unselective in its credit restriction, the development of a method of credit control that would give attention to the purpose of the borrowing has often been advocated. To a limited extent such a program can be successful. Regulations can be made to tighten up the amount of speculative loans and consumer credit given by banks, but banks are only a part of the credit system of the nation; and if there is a large demand for speculative and consumer credit, the parts of the credit system outside of government control may supply the demand so that the attempts at restriction will result only in a shift in the credit structure. This is especially true if the economy is in a fairly liquid state; there will then be so many leakages of credit that adequate selective control would be very difficult.

**TAXATION POLICY.** Some types of taxation are far more effective in combatting inflation than are others, but in using taxation for this

purpose certain other considerations must be kept in mind. Increasing the income tax may be the most equitable form of taxation, but in an inflationary period increases of sufficient magnitude to cause a significant restriction in consumers' expenditures may very well cease to be equitable. Inflation always works hardships upon people whose incomes are fixed, and substantial increases in income taxes will make them even worse off. This argument is, of course, even more true of sales and excise taxes; these taxes would be very effective in restricting the amount of consumers' expenditures in the economy, but they may accomplish their task at the cost of considerable inequity.

**PRICE CONTROL AND RATIONING.** Because of the obvious inadequacy of other measures in controlling inflation, in periods when continuing inflationary pressures are unavoidable it is sometimes necessary to resort to price control and rationing. In wartime, for instance, such measures are necessary in order to prevent a disastrous rise in prices. Continuing government war expenditures create additional income in the economy, yet at the same time leave a smaller amount of goods available for consumers to purchase. Possible increases in taxation and in voluntary savings may well not be sufficient to absorb the excess purchasing power of consumers, so that both price control and rationing are necessary.

It is sometimes proposed that these controls be applied only to necessities, but such a procedure would only intensify the inflationary pressures on the rest of the economy. For this reason if controls are instituted at all, it is usually preferable that they cover most of the consumers' goods on the market. Such a general program of control is expensive and may not be equitable in all instances, but it is probably less expensive and more equitable than the absence of such a program would be. A wild price inflation might well become explosive and cause a complete breakdown of the economic system at a time when the country is in very great need of its efficient operation.

Emergencies requiring the use of as drastic measures as price control and rationing of consumers' goods will usually also necessitate controls on production in the economy in order to ensure that resources will be devoted to the ends, *i.e.*, war production, that are necessary for the survival of the nation. Scarce raw materials will have to be controlled, not only with respect to price, but also with respect to allocation, since many industries will wish to use these materials; raw ma-

terials will be allocated to those industries which are considered to be most essential for the public welfare. Various other controls may also be necessary. For instance, in order to get the maximum amount of production without allowing prices to rise, the marginal amount of production may have to be subsidized. Continual adjustments will have to be made, furthermore, as new production programs are put into effect that disturb the existing allocation patterns of labor and materials.

In an economy in which all other goods and services are price controlled and rationed, the control of wages and the allocation of labor raise difficult problems. If wage rates are not controlled but are permitted to rise, the price-cost structure will be distorted and increases of prices will have to be granted to producers throughout the economy. This, of course, is in effect permitting the inflation to take place and should be prevented. On the other hand, however, it may be necessary to offer higher wages in order to induce labor to enter the fields in which it is most needed. Furthermore, freezing wage rates in any one fixed pattern can be extremely inequitable. With wage rates, material costs, and prices all frozen, increases in productivity would go entirely into increases in profits, and labor would not share at all in the benefits of such increased productivity.

Price control and rationing, if they are to be efficient, thus entail such complete government control of the economy that they should be considered as an anti-inflationary measure only in times of extreme emergency. Much of the natural flexibility of the economy is destroyed by rigid controls, and their continuance over a long period of years might considerably weaken the economy. Furthermore, removing such controls after the emergency is over is not easy. If they are removed too soon, a sharp price rise may occur when consumers start to spend the savings that they will have accumulated during the period of control. But if the controls are left on too long, the initiative to increase production may be weakened and the attainment of maximum levels of output may be postponed indefinitely.

### **Maintenance of Stability**

The problems of recovery from depression and control of inflation could all be avoided if the economy could achieve general stability. It has already been pointed out that there are some considerations



which make the maintenance of such stability undesirable; fluctuations may be the result of dynamic forces that bring progress in their wake. Nevertheless, these same dynamic forces may equally well bring disaster and destruction if the depressions and inflations that they generate get out of hand. Furthermore, progress obtained in this manner involves a considerable cost, since it requires that on the average the economy operate at far less than its potential capacity and that many inequities be endured.

On the other hand, however, the objective of stability does not by any means imply rigidity. Without satisfactory provision for continual adjustments among the various sectors of the economy, structural disorders will result and the whole economy will break down. For example, if a factory were required to continue to produce a given output with given costs and prices, the situation could not be adapted to the inevitable changes in consumers' tastes. Consumers might stop buying the product, and production would then simply pile up. Stability must be a long-run as well as a short-run reality, and flexibility is essential. In order to achieve such flexibility, some fluctuation upward and downward in the economy may be necessary, but this fluctuation should ordinarily be so small that it is not generally noticeable without consulting the statistical series.

The difference between desirable flexibility and undesirable sensitivity of the economic system is only a matter of degree. In an overly flexible economy, any minor change may be magnified into a major reaction through the process of cumulative adjustment. A slower process of adjustment might be more advantageous from a number of points of view. Slow change might have much less effect upon the expectations of producers and consumers than would rapid and frequent change, so that cumulative adjustments would be smaller. Furthermore, if the adjustment to change were spread out over a longer period, its importance at any one time would be less, and there would be more likelihood that offsetting adjustments would balance each other.

Satisfactory stability necessitates full employment, but full employment alone is not sufficient; it must be coupled with the optimum use of resources. Although it is impossible to identify any one best or ideal pattern of resource allocation, it can frequently be demonstrated that an existing method of resource allocation is not ideal. A number of

proposals for arriving at full employment have been discussed above, many of which entail a program of artificial spending aimed at full employment rather than the use of resources in accordance with consumer preferences. When a program designed for the attainment of full employment causes an obviously large divergence from anything that might possibly be considered an ideal resource allocation pattern—and this may frequently happen—it may safely be said that the cost of the program is large. Of course, the cost may still not be so large as that of the failure to carry through any program at all; but as long as such a situation exists, an ideal solution to the problem of maintaining full employment has not been found.

**THE USE OF COMPENSATORY POLICIES FOR STABILITY.** A cumulative adjustment, if caught at a very early stage, would need very little offsetting to prevent it from becoming worse. For this reason compensatory policies have often been advocated. Measures that might not be effective in the face of a strong cumulative movement which was well established might, if started quickly enough, provide sufficient compensation to offset the beginning of such a movement. Credit controls and interest rates could be varied whenever a tendency toward a cumulative movement upward or downward appears. Similarly, policies involving the alteration of the amount of government expenditures or taxes could be used to offset other pressures in the economy, so that no cumulative movement would result.

The application of compensatory measures raises a number of problems. In the first place it requires the ability to forecast the future with considerable accuracy. Minor fluctuations that represent only the necessary flexibility in the economy must not be interpreted as the beginning of a major cumulative adjustment, or the compensatory policies that are put into effect will actually be responsible for starting or reinforcing a cumulative movement in the opposite direction. So many exogenous factors are involved that it is doubtful if such accurate forecasting is possible. A second difficulty lies in the lack of empirical knowledge about how much and in what way the economy will react to specific compensatory policies. For this reason the relative strength of alternative measures cannot be estimated, and over- or undercompensation is likely. Trial-and-error methods, furthermore, are not likely to add very much to the store of knowledge on this score, since conditions are never exactly the same, and the econ-

omy may react quite differently to the same stimulus at different times. Finally, even if appropriate measures and appropriate timing could be determined, it would be extremely difficult to carry out these measures accurately. Many of them require action on the part of the government. Such expedients as changes in tax rates or in government expenditures may require legislative action; even if such action is not needed, they will require some time to formulate and put into effect. By the time a compensatory policy actually becomes operative, the crisis it is intended to offset may have developed into a full-fledged depression or inflation. These difficulties are, of course, all intensified if the economy is highly sensitive to change. Keeping the economy stable in the face of a knife-edge equilibrium would require constant shifts in compensatory policies, and sooner or later, either through misapplication or through errors in forecasts, a major cumulative movement would probably result.

**AUTOMATIC STABILIZERS.** Because of the difficulties inherent in the use of compensatory policies, measures that automatically provide a stabilizing influence may be preferable. Unemployment insurance is an example of such a measure. During a period of decreasing employment payments to the unemployed would prevent personal income from falling as much as it otherwise would, and during a period of inflation unemployment insurance contributions would siphon off a part of the increasing personal income, helping to bring it into line with the quantity of goods available for purchase. Progressive income taxation has also frequently been considered to have an automatic stabilizing effect. As personal income declines, income tax revenues fall off sharply, so that disposable income does not fall so fast as personal income. In an inflationary period when incomes are rising, income tax revenues will rise sharply, so that disposable income will not rise so fast as personal income. Most automatic stabilizers are not sufficiently powerful to prevent any significant fluctuation in the economy, but it is probably very true that these measures reduce the extent of fluctuations. The automatic stabilizers might be made somewhat more powerful by the introduction of certain modifications, as, for instance, the use of compulsory savings plans rather than ordinary taxes or the refunding of taxes in certain contingencies.

**MEASURES TO PREVENT DEPRESSION.** The fear of depression, with its accompanying unemployment and waste of resources, has led many

economists to give serious consideration to various general measures that would alter the institutional organization of the economy in such a way as to make depression less likely. For instance, it is often argued that rigid prices should be eliminated in so far as possible, since unemployment results only when prices are maintained at the expense of cuts in output. It is argued that the economy would not suffer depressions if only prices and wages could be made to fluctuate freely, with no restriction of output. The difficulty with this argument lies in the fact that such a procedure would not make the economy any more stable; it would simply translate all reactions into price changes. The economy would become oversensitive to any price change, and it is highly probable that any price spiral which got started would so affect the expectations of producers and consumers that an explosive situation would result. The causes of so-called price inflexibility, as has been demonstrated in the preceding chapters, lie deep in the processes of production, and an attempt to impose greater flexibility in all prices might only increase the maladjustment instead of promoting stability.

In more or less the opposite vein guaranteed annual wages have also been suggested as tending to stop the cumulative movements that lead to depression. By putting the hiring of labor on the basis of yearly commitments, much of the incentive to cut production would be lost, since such cutbacks would not reduce costs so much as they would under the institutional arrangements which now exist. At the same time steady wage payments during the year would tend to prevent the falling off of consumers' expenditures, so that the occurrence of a cumulative decline would be less likely. Whether guaranteed annual wages are feasible or not is another question. Many firms might be forced into bankruptcy when they are faced with situations in which they would normally have cut output and employment. In this contingency the guaranteed annual wage system would break down unless the government stepped in to help, and with the entry of the government as a subsidizing agent the problems of equity and efficiency are immediately raised. Unless the guaranteed annual wage were able to forestall a depression completely, therefore, there is considerable danger that the guaranteed wage would break down when most needed. A rigid plan of guaranteed annual wages, furthermore, might reduce the flexibility of the economy and thus prevent adaptation to the exogenous changes that inevitably would take place.

Depressions have often been attributed to institutional factors leading either to an actual contraction in investment expenditures or else to an insufficiency of such expenditures to offset the desired level of saving at a full employment level of income. As a cure for this situation a variety of measures have been proposed to encourage investment expenditures. Both a reduction in the corporate profits tax and a vigorous antitrust policy have been suggested for this purpose.

The proposition that investment will be encouraged by the reduction of the corporate profits tax is based on the argument that lower taxes would induce businessmen to make more risky investments, since the hope of gain would be greater. This argument needs further examination. If the same amount of tax revenue is to be raised after the corporate tax reduction, other taxes will have to be increased. Increasing income taxes on the upper income groups may cancel the effect of the corporate tax reduction, since it would reduce the return after taxes on investment. On the other hand, increasing income taxes on the lower income groups or raising sales and excise taxes will reduce the amount of goods that can be bought from business, and many firms will be forced to cut their output, so that a cumulative decline will set in. If other taxes are not increased when corporate taxes are reduced, so that the total tax revenue drops, the government will be deficit spending, and it is by no means certain that this form of deficit spending will be relatively more useful in maintaining full employment than any other form. A reduction in sales or excise taxes might well provide more stimulation to business. Furthermore, a reduction in the corporate profits tax may produce other reactions among producers besides the stimulation of risky investment, which may offset its stimulating effect. With a high corporate profits tax producers are apt to maintain their plants in better condition, spend more on advertising, and in general be more lax about reduction of costs, because the government is, in effect, paying a part of these costs; if costs were reduced, the government would take a portion of the resulting profits in taxes. Therefore it is entirely possible that a reduction in the corporate tax would reduce current expenditures of business more than it would increase investment expenditures.

The pursuit of a vigorous antitrust policy may not be any more successful in producing an increase in investment. For the most part antitrust policy is aimed at breaking up large corporations in favor of small

business. But there is no reason to believe that even if antitrust action should lead to an economy composed of relatively small competitive organizations the magnitude of investment expenditures would be larger. Competition may lead to uncertainties such that producers will be unwilling to make investments that new competitors will soon make obsolete. Furthermore, many investments in new ventures require an amount of backing that small organizations do not have. Large corporations can undertake a sufficient number of risky new ventures so that they can balance their losses against those which turn out more successfully; small enterprises cannot. Finally, the breakup of large enterprises would undoubtedly curtail basic research, now written off as a current cost. All these considerations must be balanced against the stimulating effects of introducing competition, and it is by no means assured that a net increase in investment expenditures would result.

Certain other institutional changes that have been proposed, among them modification of the tax law to permit accelerated depreciation and the averaging of profits over several years, might be more successful than outright tax reduction or antitrust policy in encouraging investment. Accelerated depreciation would allow investments to be charged off for tax purposes in a shorter period than their probable life. The immediate returns from the investment could then be used to repay its cost, and the uncertainty of the undertaking would be lessened. The extension of loss carry-overs in the tax law would permit a producer to pay taxes on approximately his average profit, with losses offsetting the profits of other years. By balancing profits and losses the small producer may be encouraged to undertake more risky investments, since, if the investment turns into a loss, it will be partially offset by a reduction in taxes.

Finally, institutional changes have been proposed that are aimed at increasing the level of consumption expenditures in the economy. Some such increase might be achieved by a redistribution of income in the economy. There are limits to the extent to which such a redistribution can be carried, however, if sufficient incentive is to be retained to assure a maximum of effort and an adequate level of investment expenditures. Alternatively, social expenditures such as old-age pensions, unemployment insurance, socialized medicine, and educational benefits might lessen the desire of individuals to save, but on

the other hand these benefits would constitute an increase in real income and so would increase the ability of individuals to save to some extent.

This discussion has been focused on the maintenance or encouragement of expenditures, either on consumption or investment, through possible institutional changes in the economy. The specific measures mentioned are obviously only a small fraction of the conceivable changes that might be made; the purpose of the discussion has been simply to suggest that this field of action exists. Should such policies be fruitful, there may be no necessity for other types of stabilization, and the danger of complicating elements in specifically designed compensatory measures may be avoided. For this reason any changes that are made in government policies or even in laws and regulations should be considered from the point of view of their effect on investment and consumption expenditures as well as in terms of any other effects they may have.

### **The Need for Conscious Policy**

Economic policy will always exist in an economy, whether it is conscious or not, and unconscious policies may have repercussions that, were they made explicit, would be considered undesirable. This fact is well illustrated by the sequence of events that followed 1929. During the late twenties the government had been endeavoring to maintain a budgetary surplus, which it used to reduce the national debt incurred during World War I. This policy was based upon the principle of sound financial operation: that the government should pay off the debt which it had incurred, to maintain the confidence of business and the people. Whatever other effects this policy may have had were unintentional and unrecognized. These unintentional effects may have been salutary in the period in which the policy was initiated, but the attempt to adhere to this procedure in the depression brought with it an unconscious economic policy that probably had a significant depressing effect. With the depression government revenue declined. Personal incomes were sharply reduced so that taxes on them were much smaller. Corporate profits declined or turned into losses, so that revenue from this source declined too. But the expenditures of the government did not shrink correspondingly. The needs of the nation were even greater in the depression than they had been in the

preceding period. Nevertheless, the government, in the attempt to retain the confidence of the country, embarked on a program designed to retain a balanced budget. A specific decision had to be made, and it was decided that deficit expenditure should be avoided if possible. The Revenue Act of 1932 accordingly increased tax rates for both individuals and corporations in the attempt to obtain more revenue, and at the same time government expenditures were cut back as much as possible. Needless to say, the reduction in the disposable income of individuals through increased taxes and reduced government expenditures probably had a greater direct effect in restricting consumers' and producers' expenditures in the economy than the balanced budget had in stimulating investment by establishing business confidence. At this time investment expenditures were almost nonexistent; businessmen who were suffering heavy losses were not in the mood to make any investment outlays, no matter how much they believed in the government. Changed conditions had automatically created a situation in which a continuation of a policy designed for another purpose had adverse repercussions that were far more important than its intended effects. The fact that the repercussions of the government's policies upon income were not taken into account did not make these repercussions any less real. Following one inflexible line of policy irrespective of changing conditions can be very dangerous.

For the best interests of the economy, any action that is undertaken should be considered from all points of view. A conscious realization of the meaning of all the facets of each measure that is proposed is necessary, so that the policy followed will assure on balance the most benefit for the economy. There is no such thing as a passive economic policy; true *laissez faire* is a Darwinian survival-of-the-fittest system, which in this day and age would be considered anarchy. Most advocates of *laissez faire*, on the contrary, have in mind an economy in which the government has a very definite role in maintaining a specific institutional framework. Furthermore, they have very definite (and by no means uniform) ideas about economic policies involving taxes, government expenditures, and government regulations. In any specific situation opinions will differ as to what is and is not a passive economic policy; it is probably true that raising tax rates in 1932 was no more *laissez faire* than allowing revenues to drop would have been. The effects of economic policy decisions cannot be avoided by refus-



ing to consider them or by saying that they do not exist. For this reason these decisions should be made conscious and explicit, so that the best choice among the possible alternatives can be made.

### CONCLUSIONS

The complexities of modern economic systems are such that there must be conscious choice among a number of different possible economic policies, and both national income statistics and income analysis should play an extremely important role in the making of these decisions. Intelligent policy cannot be formulated in the absence of knowledge and understanding of what is taking place in the economy. In the past the lack of adequate data and the failure to understand the mechanisms involved prevented policy-makers from knowing what the effects of their specific measures would be, yet this did not prevent the policies from being injurious to the economy. More data are available about the economy today and understanding of its working is greater than was true twenty years ago, but this does not ensure that the policies followed will be correct. Progress in understanding the working of economic forces in an empirical framework is bound to be slow. The series of problems is infinite, and complete understanding is a contradiction in terms. With the progress of knowledge, however, relatively more and more can be accomplished in achieving control over the environment in which the economy operates. The economy will not be so completely at the mercy of destructive forces as it has been in recent years, and creative forces will have greater freedom to operate.



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